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More Passenger Train Cancellations

THE coal stocks of British Railways early this week stood at less than two weeks' supply. Whilst the passenger services suspended so far, and including the many new cancellations this week in the North Eastern Region, have been lightly loaded, secondary main-line and branch trains, the London Midland Region has selected for cancellation next week a number of long- and medium-distance expresses, some details of which are given elsewhere in this issue. Even if only the least patronised trains were chosen, and not those of a "commercial" nature, the result is a distinct deterioration in services offered to the public. There will be considerable gaps, for instance, in the Manchester and Liverpool to Euston departures and in the Manchester-Glasgow service. Midland Division services, which have already suffered in recent years, are worsened in the case of the St. Pancras-Manchester and former M.R. West of England line trains by that arrangement most irritating to travellers, the "certain days only" train. This last applies also to certain Euston-Birmingham services, which, however, are partly compensated by Western Region trains. How far these cuts, even if temporary, will lose traffic to the railways is problematical; it is fortunate that they have not had to be made in the holiday season, when motorcoach competition counts for more. The less frequented local and branch services, and interurban services in the Midlands and North, were probably due for cancellation as redundant in any event, the traffic having long since gone to the roads. As it is, however, the inconvenience to the travelling public is still very small. The drastic step, popular during the first world war but comparatively little practised during the second, of curtailing restaurant car facilities so as to lighten trains, would be a serious commercial blow to the Railway and Hotels Executives. It is to be hoped, however, that it is still far off, and the coal situation meanwhile may improve.

Mr. H. R. McIntosh

MR. H. R. McINTOSH'S tenure of office as Mechanical Engineer of the Great Northern Railway (Ireland) has covered twelve years in which not only wartime difficulties, but mounting uncertainty as to the company's future, have had to be faced. Notwithstanding this, the mechanical engineering department has maintained a high standard of technical efficiency and has not lagged behind in the development of locomotive and rolling stock design. Mr. McIntosh, who joined the G.N.R.(I.) 51 years ago, has been associated with railcar development on that railway since 1905, when a steam unit was introduced. Though this particular project was discontinued after 1913, the first diesel railcar was introduced to the system in 1931 and considerable use is now made of these units. Mr. McIntosh has maintained a keen interest in diesel railcar operation and, as recorded in our June 2 issue, the first of a new series of express three-coach railcars went into service last year. The three-cylinder simple "VS" class 4-4-0 locomotives, which work the non-stop "Enterprise Express" between Dublin and Belfast, were built to the design of Mr. McIntosh in co-operation with the builders, Beyer, Peacock & Co. Ltd., and he has also been responsible for the design of the dining and buffet cars.

Appeal to Postpone Steel Vesting Date

SPEAKING to members of the North Midland Region of the F.B.I. in Nottingham on Wednesday in last week the President of the Federation of British Industries made yet another urgent appeal to the Government to postpone the taking over of the steel industry. Sir Robert Sinclair pointed out that the circumstances had changed materially since the early autumn when the vesting date under the Iron & Steel Act was fixed for February 15. Then, there was contemplated a defence programme which could be undertaken over a period of three years, during which the further demands on industry could largely be met by increasing productivity without shortages of raw materials. The position is very different now, when the urgency of speeding up the defence programme is such that there may be some difficulty in accomplishing it in time, making it more than ever important that nothing should occur at the present time likely to disrupt the organisation and slow down the production of an industry which since the war can claim a record of achievement second to none. Surely the situation calls for statesmanship of a high order and at the same time presents an opportunity for removing any suspicion that political considerations come before the national interest.

Danger of a Partisan Attitude to Traffic

THE comment that as consolidation within the Road Haulage Executive approaches completion, increasing attention must be given to that Executive's place in the activities of the British Transport Commission, was made by Mr. G. W. Quick Smith, Secretary & Legal Adviser, Road Haulage Executive, in a paper to the Railway Students' Association on January 10, which was read by Major-General G. N. Russell, Chairman of the Executive. He believed the staffs of the carrying Executives thought too much of retaining or regaining traffics considered theirs by right, and of protecting their own services. The Commission existed to serve the trading community, and to whatever Executive a member of the staff might owe primary allegiance, he should always have in mind the resources of the Commission as a whole and consider the possibility of moving particular traffics more speedily, more efficiently, or more cheaply by using the facilities of

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another Executive. Referring to rates and charges, he said the Road Haulage Executive had had to face the fact that sub-standard rates must be lifted to an economic level. The charge levelled against the Executive that the real measure of the May increase in rates was far greater than 7½ per cent., was untrue. A number of individual sub-standard rates had been substantially increased, but analysis showed that the overall increase was very close to 7½ per cent. The paper was written and presented before the announcement of a 10 per cent. increase in general haulage and parcels rates as from January 29.

British Transport Commission Statistics

LOCOMOTIVE coal consumption figures for British Railways during Period 12 of 1950 show that tonnage consumed by all Regions was 0·6 per cent. less, and pounds per engine-mile 0·1 per cent. less than a year previously; in so far as last year's alterations in Regional boundaries do not invalidate comparisons, pounds per engine-mile rose 1·7 per cent. in the London Midland and fell 5·4 per cent. in the North Eastern Region. Total units of electricity consumed for traction were down by one per cent., though, as might be expected in view of intensification of the Shenfield line services, they were up by nearly 11 per cent. for the Eastern Region; total units per car-mile rose 1·1 per cent. For London Transport, units consumed rose 0·2, and units per car-mile 1·5 per cent. Comparison with British Railways however is complicated by through running in London and suburbs. Diesel oil consumption by British Railways locomotives rose 27·5 per cent., and 47 per cent. in the London Midland Region. British Railways freight train-miles per train engine-hour remained almost the same. Net ton-miles per total engine-hour rose 3·4 per cent. against last year for all, and 7·5 per cent. for the Eastern and 6 per cent. for the North Eastern Regions.

Overseas Railway Traffics

FURTHER substantial advances were made in Paraguay Central traffics during the fortnight ended January 12, and aggregate receipts for the current 28 weeks of the financial year 1950-51 were higher by G1,620,941, at G5,623,658. In the two weeks under review receipts rose by G28,284 to G160,619 in the first seven days, and were G60,851 higher at G196,106 during the week ended January 12. Antofagasta (Chili) & Bolivia traffics have begun the financial year for 1951 with two successive increases. The improvement during the week ended January 7 was £25,200 at £76,760, and this was followed by a £14,000 advance in the second week. On the aggregate, receipts at £178,220, are £38,210 higher than traffics for the equivalent period last year. During December Taltal traffics showed a $57,262 decline to $1,435,116, though receipts for the current 26 weeks are still $1,584,101 higher at $9,256,802. There was a £29,865 improvement in Gold Coast traffics for November and the aggregate advance for 35 weeks is now £65,411, at £1,959,582; traffics for the month amounted to £308,361.

East African Railway and Harbour Development

MORE than £11,000,000 was spent in capital expenditure by the East African Railways & Harbours between 1946 and 1949, according to Sir Philip Mitchell, Governor of Kenya, in an address to the Mombasa Rotary Club. The total expenditure on works sanctioned, but not completed, exceeds £20,500,000. In Tanganyika, railway traffic is now the highest ever. Sir Philip Mitchell said it was estimated that 740,000 tons of goods will have been conveyed in 1950, as against 335,000 for 1939. Ton-miles now average 15,000,000 a month compared with 4,000,000 before the war. Current developments in Tanganyika include new workshops at Kigoma and Iringa, and an expenditure of £500,000 on heavy diesel passenger and freight vehicles. Three deep-water berths are to be built at Dar es Salaam Port and rail construction inland from Mtwara continues, and a branch to Mpanda was recently completed at a cost of £1,000,000. In Kenya, the main line from Nairobi to Nakuru has been realigned, greatly reducing the gradients and enabling an increase in engine loads. At Mombasa, a ten-year harbour plan is costing £2,500,000. A major project is the extension of the railway in Uganda westwards to the Ruwenzori Range and the Kilembe copper deposits. Sir Philip Mitchell believed that the day was not far distant when East African rolling stock would be running into Nyasaland, Northern Rhodesia, the Sudan, and the Congo, and East African ships to all ports from Mtwara to Kilindini.

An Essential Amenity

THE restaurant-car services on British Railways operated by the Hotels Executive were discussed by Lord Inman, then Chairman of that Executive, in our November 24, 1950, issue. Commenting in that issue on Lord Inman's review, we suggested that such services were an amenity which the traveller had the right to expect. This view was stressed by Lord Inman on Tuesday at a conference at which he gave a summary (one of his last acts on retirement from the Chairmanship) of the Hotels Executive's activities. Restaurant cars do not pay, and are unlikely to do so, and this is the case in most countries with relatively high labour costs. But well-served meals *en route* are one of the best selling points of rail travel. Without this facility much traffic would go to the roads; and Lord Inman has emphasised the insistence of party travel organisers on refreshment-car facilities as a condition of booking. The various alternatives to restaurant-cars proper, such as buffet cars, and mobile trolleys and tray meals in trains, are an attempt to meet a public need whilst reducing costs; to some extent they reflect changed public taste. Whatever form they take, however, refreshment facilities in trains in this country are essential if passenger traffic is to be retained.

A Conspectus of Railway Statistics

ONE of the best short works on the subject ever written is a conspectus* of "external" (or published) rail and road statistics by Mr. F. A. A. Menzler, Chief Development & Research Officer, London Transport Executive, recently published by the Royal Statistical Society. In a very small compass are notes on the nature of transport statistics, a general survey of British railway statistics, notes on the published statistics of British and some foreign railway systems, and a well-chosen bibliography of the more recent works on the subject in English. The introductory notes, which are precise and clear, give some valuable definitions. The historical survey of British railway statistics extends from the first printed accounts in 1827 of the Stockton & Darlington Railway to the first annual report (for 1948) of the British Transport Commission, with warnings of the discrepancies arising out of changes in terminology and method. No claim is made to cover the wide field of foreign railway statistics, but Mr. Menzler rightly alludes to the use in Germany of axle- (as opposed to car-) kilometres, and to the *International Railway Statistics* issued by the International Union of Railways.

Bulk Carriage of Flour

IN the United States, special stainless-steel hoppers are now being used for the sanitary bulk transport of flour, plastics, chemicals, and pharmaceuticals. They are mounted in pairs on 55-ft. 70-ton covered hopper wagons, 25 of which are now in flour service. Compared with loading in sacks in covered wagons, the bulk transport gives improved sanitation, freedom from infestation, higher capacity loads, reduced handling time, and reduction in claims for damage. The two hopper compartments each have six hopper-type bottoms, but for sanitary reasons unloading is effected pneumatically. A syntron electro-mechanical vibrator applied to each hopper ensures uniform flow of lading and that it does not stick to the hopper's inclined sheets. Each hopper has two or four

* "Rail and Road Statistics." By F. A. A. Menzler. Reprinted from *The Journal of the Royal Statistical Society*, 4, Portugal Street, London, W.C.2. Price 1s. net

loading hatches, and loading is done at the mill by gravity, a pneumatic spinner permitting the hopper to be loaded to within a few inches of its roof. The air space is thus so greatly reduced that condensation is negligible whatever the temperature. Infestation by weevils has been almost entirely eliminated, and contamination is reduced to a minimum by fitting filters to both loading hatches and unloading nozzles.

Railway Historical Relics

SOON after its appointment the B.T.C. asked the railways and the L.P.T.B. for their views on ways of dealing with collections of relics and records which would come under its control in 1948. Many of the actual achievements in preserving specific records had hitherto been the result of local effort. This step was followed by the appointment of a committee whose report* has now been published and which has been accepted in principle by the B.T.C. Because of the need for economy the committee wisely does not recommend any grandiose schemes. Its main object is to create in the British Transport organisation a sense of the value of its historic heritage and it has in mind the provision of a permanent British Transport Museum in London later on. It is suggested that the old terminus at Nine Elms would provide a suitable site. This appears to us to overlook the inconvenience of access to that site and its rather unenviable surroundings. The committee recommends that a museum for smaller relics, such as prints, seals, etc., should be established at Euston, and that, eventually, exhibits in the existing York museum should cover railway history in the North of England. Exhibits established in Edinburgh could be expanded to form a Scottish museum and consideration should also be given to the formation of a collection for Wales at Cardiff.

Tendencies in French Signalling

THE damage suffered by stations and yards in France towards the end of the war necessitated a considerable amount of new signalling rehabilitation work; this, together with the fact that many installations were in need of either renewal or large-scale alterations, led to a consideration of the policy to be followed in future work. Existence also of various types of equipment derived from the former separate companies did not make it easier or less expensive. Standard designs of mechanical and electro-mechanical locking frames and associated apparatus were developed and a start made in applying them. In power signalling it was thought advisable to move along new lines. Route setting had long been the practice, using mechanical interlocking between route-levers in differing designs of machines, according to the manufacturer concerned or the practice of a particular railway, as on the former Eastern Railway, where the "entrance and exit" principle had long been applied.

Testing Power Signalling Installations

AN important aspect of signal engineering, the testing of installations, was dealt with in a paper read by Mr. N. Marshall before the Institution of Railway Signal Engineers on January 3. However satisfactory and accurate plans and diagrams may be, everything depends on no error being made anywhere in the actual work, and, although in some cases the checking of the circuits and functioning of the apparatus may not be very difficult, it becomes arduous when dealing with large layouts. It is of course possible to make a slip in the simplest cases, with unwished-for results later, but in the complicated cases many factors are involved, and keeping account of them when testing calls for much skill, unlimited patience, and meticulous care. Different opinions were put forward during the discussion of the paper, which is reported in other pages this week, but all participants agreed that Mr. Marshall had rendered the Institution valuable service in bringing this subject before it for the first time.

* "The Preservation of Relics and Records." British Transport Commission, 55 Broadway, London, S.W.1. Price 1s. 6d.

A 33-kV. Feeder Problem

AN unusual sequence of 33-kV. feeder breakdowns during 1943 to 1945 on a section of the then Southern Railway, led to an investigation into the characteristics of 33-kV. cable networks feeding rectifiers, which resulted in a paper, entitled "Influence of Rectifier Harmonics in a Railway System on the Dielectric Stability of 33-kV. Cables," recently being read to the Institution of Electrical Engineers by Mr. S. B. Warder, Dr. E. Friedlander, and Dr. A. N. Arman. The cause of the breakdowns merit reporting in some detail.

The electrified sections of the Southern Region outside the London suburban area derive their traction current from mercury arc rectifiers supplied by the Grid through a 33,000-V. railway network built up progressively as electrification has extended; thus, there is within it considerable difference in age between various cable sections. The oldest section, first operated in July, 1932, is that between Croydon and Three Bridges; this section was the first to give trouble. After 12 years of operation it was noticed that the incidence of cable insulation failures, hitherto below the generally accepted rate of 0·03 faults per mile a year, had risen in 1943 to 0·07 in timber trough and surface concrete trough installations and to 0·09 in tunnel. In the next two years, 1944 and 1945, the incidence in troughing remained unchanged at 0·07, but that in tunnel rose to 0·54 in 1944 and 0·72 in 1945. After the occurrence of four faults in the same phase of the section of cable through Redhill Tunnel, the complete section was replaced in October, 1945; similarly, two further sections have since been replaced. No faults have occurred on these replacement sections, which suggests that the breakdowns experienced were due to some ageing effect rather than to any change of conditions in the network.

It was found that the insulating material had undergone some kind of polymerisation process, forming extensive areas of wax. This is not unusual in networks at this voltage, but the waxing was more extensive and darker than usual, and was associated with small pin-holes in the inner layers of insulation. It was the pin-holes which first indicated the immediate cause of the breakdowns; clearly an excessive voltage was being impressed on the cable. Similar pin-holes had been observed elsewhere in non-traction applications, and had been attributed to voltage surges, so this line of investigation was pursued, together with three others, namely, faulty manufacture, neutral instability, and harmonics in the system.

The cable section removed from Redhill Tunnel was sent to the manufacturers for examination and by both visual inspection and by dielectric tests it was ascertained that the pin-holing and deterioration became progressively worse as the centre of the tunnel was approached. At the same time it was established that faulty manufacture was not the cause of the breakdowns. In any case some other explanation had to be sought for the unusual concentration of breakdowns in tunnel. Calculations established that neither neutral instability nor current surges could occur in the system in sufficient magnitude to produce a voltage adequate to puncture the cable (140,000 volts r.m.s.) and investigations were consequently directed towards the existence of harmonics in the system. This was a natural line of approach since rectifiers are a fruitful source of harmonic distortion and amplification.

On most networks, however, such distortion does not cause serious trouble in view of the existence of parallel loads, the damping influence of direct alternator supply, the mutual cancellation of harmonics by internal phase displacement, and so on. These factors are not present in the system under consideration and it is believed that an installation supplying direct current to an electrified railway system is most likely to be exposed to harmonic troubles if short individual feeders are energised by single power transformers connected to a powerful mains supply. Measurements on the Croydon system have indeed proved that harmonics can be reduced by inter-connection although local conditions have hitherto prevented this being fully applied. Oscillograph and other tests, together with calculations, proved that harmonic distortion was occurring on

the network, and was being aggravated by the resonance of the system. It was determined that these harmonics increased the crest value of the voltage wave by about 20 per cent. However, the influences giving rise to these conditions have always been present, and further investigation was necessary to establish the mechanism of insulation breakdown and its high incidence in tunnel.

Solid cable insulation inevitably contains voids of about the thickness of the insulating paper tape. These are not present at manufacture, but form progressively with age, and they give rise to internal discharges at a fraction of the normal operating voltage of the cable. Such discharges are the seed from which ultimate breakdown starts and they may occur in the larger voids (due to the presence of hydrogen in the voids) at voltages as low as 10-20 per cent. of the rated voltage. In certain circumstances, this may be less than the voltage difference between adjacent maxima and minima in a voltage wave having bad harmonic distortion, so that the number of discharges and the energy released in the voids might be greatly increased by harmonics, thus proportionately reducing cable life. The development of such voids is inhibited by subjection of the cable to frequent heat cycles, the resultant breathing of the cable bringing about a redistribution of the cable compound which tends partly to fill any voids which may have been formed. In this fact lies the key to the curious distribution of the breakdowns: clearly the more frequent breakdowns in tunnel and in lightly loaded end sections of the cables are due to the dielectric at such locations being less subject to curing effect of heat cycles occasioned by climatic temperature changes or heavy load currents. It is interesting to note that 56 per cent. of all failures have occurred on points which were not accessible to sunshine.

The following four points appear to explain logically the occurrence of the unusual breakdown phenomena described at the outset of the paper:—

1. The amplitude of the harmonics had reached a limit where self-amplification arising from irregular (multiple) commutation of the rectifiers took place.
2. The increased crest value was equivalent to prolonged operation of a 33-kV. cable at 40 kV. with consequent fatigue of the insulation.
3. The relative amplitude of the harmonics had reached the limit where a rapidly increasing discharge energy in the larger voids of the cable dielectric can be expected.
4. The curing effect of moderate heat cycles due to either atmospheric variations of temperature or to varying load was absent in those sections of the cable which broke down more frequently.

The authors are to be congratulated on their combination of experimental work and on their inductive and deductive reasoning.

South Australian Railways

THE report for the year ended June 30, 1949, of the South Australian Railways, which has been sent to us by the Railways Commissioner, Mr. R. H. Chapman, states that the deficit continued to rise, despite adjustments in freight rates and fares which brought in £250,000 additional revenue; increases in expenditure due to wage awards and rises in material costs increased expenditure by over £1,000,000, and £228,000 additional receipts were the result of increased business and efficiency in operation.

Principal results are as follow:—

	1947-48	1948-49
	(Thousands)	
Total train mileage	6,134	6,059
Passenger journeys	19,067	18,210
Goods gross tonnage	3,585	3,815
	(£ thousands)	
Coaching receipts	1,295	1,355
Goods receipts	3,402	4,023
Total receipts	5,110	5,885
Total working expenses	5,856	7,139
Deficit (including interest)	2,026	2,550

Mr. Chapman points out that, whilst the railway is compelled to pay all wage increases awarded by the authorities, and must buy materials in the open market, rate and fare increases can be made only with the approval of the State Parliament. It is the policy of the South Australian Government to debit general revenue with a considerable proportion of the cost of providing rail transportation, and in such circumstances, with costs increasing far more quickly than rates and fares, increased deficits are inevitable. To balance the railway budget for 1948-49 would have necessitated an average increase in rates and fares of 43 per cent. The increases put into effect on March 1, 1949, varied between 15 and 18 per cent. for freight rates, and between 7 per cent. (country area) and 25 per cent. (town area) for passenger fares.

Shortage of coal, aggravated by the New South Wales coal strike in June, 1949, made train working very difficult. In February of that year successful trials had been made with combined coal and oil burning equipment for locomotives, and on commencement of the strike some 100 locomotives were so equipped within a few weeks. Oil burning was facilitated by use of a heavier and cheaper oil. A contract was entered into with The English Electric Co. Ltd. for the supply of sets of diesel-electric locomotive equipment, comprising engines, generators, traction motors, and so on; frames, bogies, etc., are being built at the S.A.R. Islington Workshops. The new locomotives, developing 1,760 h.p., are to be used on the Adelaide to Melbourne "Overland Express" and on goods trains between Mile End (Adelaide) and Tailem Bend. New rolling stock for the "Overland Express" included "roomette" sleeping cars.

Work on Wolseley to Millicent gauge widening project (described in our September 23, 1949, issue) proceeded. As regards standardisation of railway gauges throughout Australia, although agreement was reached between the Premiers of New South Wales, Victoria, and South Australia, no progress was possible because of failure of the New South Wales Parliament to enact the necessary legislation. Proposals for electrification of the Adelaide suburban lines were reported on favourably by the Royal Commission on State Transport Services and referred to the Public Works Standing Committee.

U.S.A. Railway Wagon Supply

IN our December 29, 1950, issue an article summed up the wagon position on British Railways, as far as that was revealed by British Transport Commission statistics to November 5. These statistics do not cover wagon shortages or the average turn-round time of wagons, so that it is impossible to form a complete picture of the situation. We can see more clearly how wagon supply stands in the United States from the monthly bulletins published by the Association of American Railroads. During the national emergency proclaimed by the President, the railways will be the backbone of the U.S.A. transport system, as they were during the last war, and their state of efficiency is therefore a matter of vital concern both to the States and to Western Europe. It is reassuring to find from the statistics to November 11 that the freight rolling stock is being strengthened systematically.

Because of poor trade, the railways allowed the wagon stock to run down after July, 1949, by some 56,000. More wagons were retired each month than were put into service, but beginning in January, 1951, the number of new wagons should exceed the number withdrawn. During the four months July to October, over 100,000 wagons have been ordered, so that the builders have a full year's work ahead, even if they construct 10,000 wagons a month.

On November 1 the total wagon stock numbered 1,799,100. The under-repair percentage was 5·7. Over three months a reduction in the percentage added nearly 22,000 wagons to the number available for traffic. In October the turn-round time for all types of wagon was 13·4 days, compared with nearly 20 days in October, 1949, and 12·3 days in October, 1948, before the five-day week came into full force.

In the 45 weeks to November 11 the number of wagons loaded was 33,731,900, an increase of 7·5 per cent. on 1949,

but 10 per cent. below 1948. Coal loadings in the fall of the year averaged 165,000 wagons a week and on November 1 bituminous coal stocks amounted to 70 million tons or 57 days' supply. In 1950 bituminous production is expected to exceed 500 million tons. No wonder that the United States can ship locomotive coal to South Wales! While coal loadings to November 11 were up 19 per cent. on 1949, the valuable "smalls" traffic was down 7·7 per cent. and was 22·5 per cent. below 1948. Twenty years ago one wagon in every four carried "smalls." In 1950 the proportion fell to one in nine. The U.S.A. railways have lost their hold on less-than-wagon-load traffic, in spite of the special arrangements which several of the more progressive lines have made to shorten transit times.

The growing use of diesel-electric locomotives for freight train working is expected to increase the output of the wagon stock. Of the 2,220 locomotives installed during the 12 months ended October last, all but 21 were diesels. The total of 239 new locomotives put into service in October alone was the largest number for any month since 1923. On November 1 over 1,500 locomotives remained on order. Already there are 17 out of the 132 Class I railways which do not own a single steam locomotive.

Altogether, in the first nine months of 1950, the railways committed themselves to an expenditure of $915,000,000 on replenishing their rolling stock. By June, 1951, they should be in a fairly strong position to meet the usual seasonal demands for wagons. The latest news is that the average daily net shortage during the week ended December 2 was only 3,900 wagons of all classes; there was a daily surplus of 3,100 refrigerator cars. From the middle of August to the end of October the average daily net shortage was at least 30,000 wagons. The critical stage would thus seem to be over. As soon as acute difficulties arose, the Association of American Railroads issued a weekly statement showing the average daily number of wagons of different types, which could not be supplied. These statements, together with the monthly bulletins on wagon supply, kept the public fully advised about the transport situation. It was not left to learn in a casual way that an acute shortage of certain types of wagons existed.

Decisions of the Johannesburg Conference

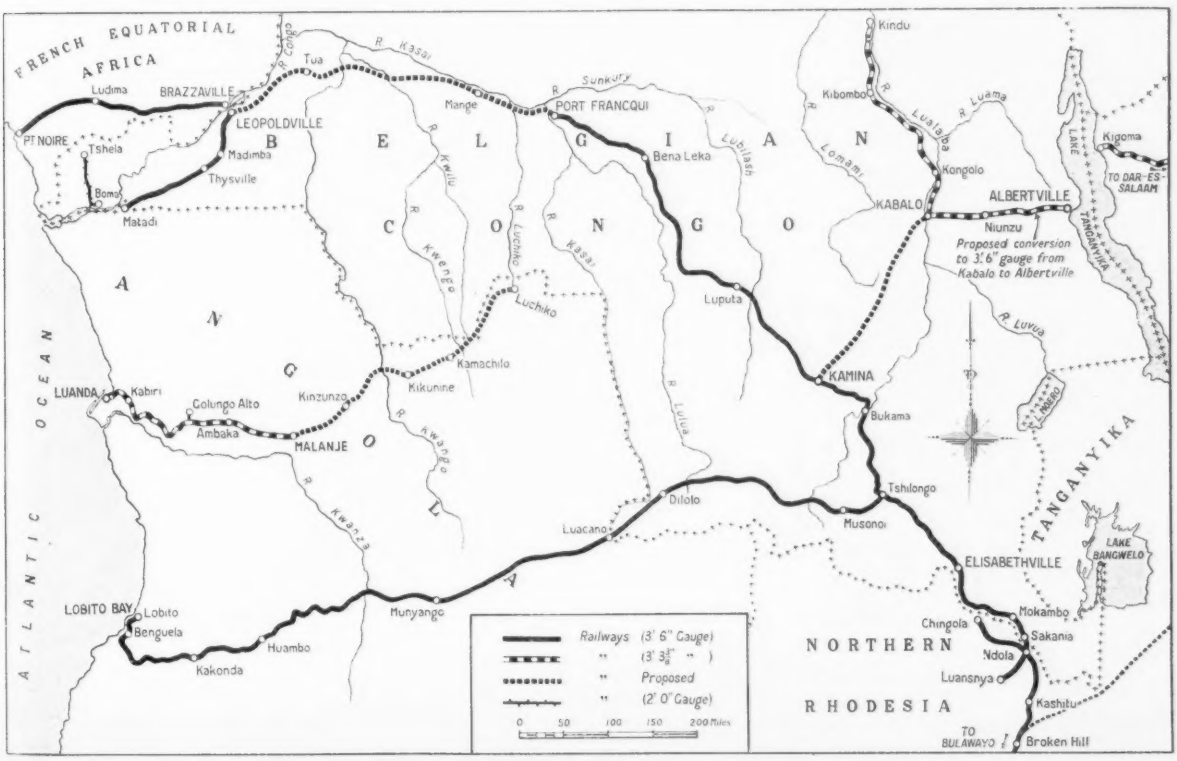
THE proceedings of the Central and Southern Africa Transport Conference reported in our November 24 issue, ended in Johannesburg on November 16 in a spirit of goodwill. Although there was complete unanimity on the desirability of continuing collaboration by having a permanent organisation, the Constitution Committee could not reach unanimous agreement on the form which such collaboration should take in future. The matter is being referred back to the Governments for further consideration, with the draft constitution which, it is suggested, might be used as a basis for further deliberation.

It was also decided that the existing interim organisation in Johannesburg should continue in its present form and situation until the Governments concerned have come to further conclusion on the exact form of collaboration in African transport. The final reports of the various committees, which will be included in the final act and official record of the Conference, will still have to be considered and ratified by the various Governments.

The Economic Development Committee heard reports from the delegations on twenty-four transport projects, covering the development of harbours, railways, roads, and inland water transport systems. The areas range geographically from Uganda and French Equatorial Africa to the Union of South Africa. Many of these projects are long-term, so the Committee merely noted reports of various Governments and did not consider it necessary to make recommendations on projects.

The Railways, Marine Ports & Inland Waterways Committee recommended that a 3 ft. 6 in. gauge be accepted as the ultimate standard for all important railways in Central and Southern Africa. This was adopted by the plenary session. With regard to the proposal to construct a more direct line between Lourenço Marques and Southern Rhodesia either *via* Beit Bridge or Pafuri, the Committee stated that neither of the proposed links presented technical difficulties.

One of the most important decisions was one to set up a permanent organisation to encourage member Gov-



Map of railways in Central Africa, showing lines discussed at the Central & Southern Africa Transport Conference

ernments to co-ordinate their transport plans in the light of ever-changing conditions. The resolution was moved by Sir Evelyn Baring, leader of the United Kingdom delegation, who intimated that the British delegation at a later stage would table a draft constitution for such an organisation.

The Railways, Marine Ports & Inland Waterways Committee appointed a sub-committee to discuss the Secretary-General's comments on a questionnaire submitted to the delegates before the start of the Transport Conference. The Secretary-General said in this document that, according to figures received, there were several railway lines which were overloaded or were approaching saturation point.

The Chairman, Sir Reginald E. Robins (East Africa High Commission) suggested that the Secretary-General's document might be considered by a small sub-committee, as the matter was highly technical. The Portuguese delegate agreed to supply the meeting with more statistical information after the United Kingdom delegate had pointed out that it would be useful if the figures already supplied could be broken down still further to give details of import and export tonnages, as it had been alleged that there was congestion at Beira with imports and it was this aspect that was likely to be a bottleneck.

The construction of a railway from Kamina to Kabalo connecting the southern railway system of the Belgian Congo with the great lakes system and Dar-es-Salaam, was discussed by the Economic Development Committee of the Central & Southern Africa Transport Conference. The Chairman, M. E. de Backer (Belgium and Belgian Congo), reporting on the latest developments of this scheme, said that the Kamina-Kabalo rail link would connect the Chemins de fer des Grand Lacs with those of the Bas-Congo au Katanga and with the Angola Railways. It would also connect Matadi with Albertville. The proposed rail link would serve as a subsidiary means of transport in the event of an accident or insufficiency of navigation in the section of the Congo River between Kabalo and Bukama.

Routing of the proposed railway link had received serious consideration, and the Government had accepted the view that a rail link should be built over the shortest route between the two points because of financial considerations. A study group had been set up to decide the final location of the railway. The building of a bridge at Kabalo for both road and rail traffic would be proceeded with as part of the railway project. Negotiations were proceeding at the same time in connection with the financing of the railway.

The principal economic aims of the proposed link were: (i) the joining of two main railway networks, and (ii) the development of the region through which the railway would pass. It was believed that the projected railway would result in a new distribution of inter-territorial traffic, and the press believed that it would result in a greater flow of traffic through both Lobito and Dar-es-Salaam. The interest shown by the press in the project indicated that it was regarded as one of international consequence, stress being laid on the fact that if the railway were constructed there would be an uninterrupted line of communication from Lobito to Dar-es-Salaam, except where it traversed Lake Tanganyika.

Monsieur P. Camus (Belgium, including Belgian Congo) said in reply to a question that a preliminary survey had been completed; the use of aerial photography would help to speed up the work. Concurrently, a bridge would be built at Kabalo, a project which would occupy two-and-a-half years. The whole project was expected to be finished within four to five years, including the widening of the gauge between Albertville and Kabalo from metre to 3 ft. 6 in.

Mr. P. E. Millbourne (United Kingdom) said that the scheme appeared to have two aspects: its implications on the development of the Congo itself; and implications arising from the completion of a railway linking two oceans. He fully approved of the scheme and thought it excellent. Monsieur de Backer said that he agreed with the views of Mr. Millbourne. The projected railway would serve the Congo area primarily, the inter-territorial or international aspect being secondary.

The committee agreed to the following provisional proposal, subject to reconsideration when other proposals came forward: " Besides assisting in the development of the eastern part of the Belgian Congo and affording better communications between Lake Tanganyika and South Africa, the proposed Kabalo-Kamina rail link represents an important contribution to international traffic by facilitating trans-continental communications between the Atlantic and Indian oceans."

A Notable U.S.A. Railway Centenary

THE Chicago, Milwaukee, St. Paul & Pacific Railroad completed the first one hundred years of its existence on November 20, 1950. With a total route-mileage of 10,671, it is one of the only two American railways with its own trackage throughout from Chicago to the Pacific coast. In 1900, it extended only to a point 40 miles short of the Missouri, and covered a total of 6,596 route-miles. The advantages of a through route to the Pacific were so obvious that in 1905, the directors authorised an extension of 854 miles from Mobridge, South Dakota, to Seattle and Tacoma, and although five parallel mountain ranges had to be crossed, construction was completed in less than three years. By 1911 there were through trains between Chicago and Seattle-Tacoma, and building or acquisition of branches had put the Milwaukee mileage up to the 10,000-mile mark.

With six summits and lengthy gradients, the Pacific extension was not easy to work. This led the company to the historic step of electrifying the line over the 438 miles between Harlowton, Montana, and Avery, Idaho, completed in 1915, and notable not only as being the longest continuous electrification in the world at that time, but also the first to employ regenerative braking. The success of this installation through the Belt, Rocky, and Bitter Root Mountains prompted a second electrification scheme, through the Cascades further west, of 207 miles between Othello and Seattle and Tacoma; this was completed in 1920, and brought the electrified route-mileage up to a total of 655. The change from steam to hydro-electric power had an additional value in helping to reduce coal consumption, for the Milwaukee has no coal mines on or near its system.

Electrification was a heavy drain on resources, and with deferred maintenance of track and rolling stock during the first world war left the Milwaukee ill-prepared to meet post-war conditions, so that receivership became necessary in 1925. Two years later the Chicago, Milwaukee, St. Paul & Pacific Railroad Company was formed to take over the property, but the recovery was short-lived, for the depression of the early 1930's forced the company into another bankruptcy in 1935, which was to last for ten years. Since the reorganisation of 1945, the period has been one of steady recovery.

While approximately $26,000,000 of the mortgage debt of $167,500,000 has been paid off, there has been a considerable investment in improvements, including the purchase of 132 new diesel-electric locomotives (209 units), 14,681 bogie wagons, and 215 passenger coaches. The Milwaukee is one of the few railways in U.S.A. building its own coaches and wagons.

The company's interest in high-speed began with the inauguration, in 1935 of the "Hiawatha" streamline train between Chicago and St. Paul and Minneapolis, worked at first by 4-4-2 oil-fired steam locomotives of special design (the last Atlantics to be built in the U.S.A.). From the parent "Hiawatha" is descended a whole family of high speed streamliners. Like most U.S.A. railways, the Milwaukee has replaced steam by diesel-electric power as rapidly as finances have permitted. In August, 1945, 1,066 steam and 86 diesel locomotives were in service; five years later the proportion was 820 steam to 216 diesel, but the diesels, just over one-quarter of the total, were both responsible for two-thirds of the total locomotive mileage, and also were hauling considerably heavier loads than the average with steam.

LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

Cleaner Trains

January 5

SIR,—In an editorial in your December 8 issue you discussed the many complaints made of dirty railway carriages and explained some of the difficulties that the railways have to face.

On Sundays so few trains run that sufficient clean carriages should be available. Yet on December 31 on the 5 p.m. from Manchester Exchange to Newcastle I travelled in a filthy and dilapidated carriage, No. 62507, inadequately lit and heated and with a badly-fitting window that allowed the compartment to become filled with fumes in the tunnels. In four carriages the W.C.s would not flush and there was no running water, but a jug was provided. A regular traveller told me that the train is usually like this.

The corresponding weekday train, the 5.55 p.m. from Manchester (balancing as on Sundays the morning train from Newcastle), consists of reasonably clean and modern stock. Why cannot this train be used on Sundays instead of the wreck that I travelled in? Perhaps no one can be bothered to uncouple the restaurant car.

Yours faithfully,

T. A. KLETZ

228, Bishopton Road West, Stockton-on-Tees

Railway Efficiency

January 9

SIR,—I notice that in your issue of December 15, Mr. E. R. B. Roberts writes that the railways claim that they were carrying 1,800,000,000 passengers a year before the 1914-18 war. This appears to me rather a high figure. In the year 1907 the English and Scottish Railways, including the Underground group, carried 1,104,908,856 passengers.

Yours faithfully,

H. W. CECIL

8, Powis Grove, Brighton, 1

January 11

SIR,—For once, Mr. E. R. B. Roberts is absolutely correct when he says in your December 15 issue that evidently I do not know that before the 1914-18 war the railways at present operated by the Railway Executive claimed that they were carrying 1,800,000,000 *originating* passengers a year. This is not altogether surprising, for nobody else but Mr. E. R. B. Roberts knows it, as it is not a fact.

It is true that in 1913 some 1,800,000,000 passengers were conveyed in England, Wales and Scotland, but these were "gross" numbers, that is, a passenger from the West of England to the North of Scotland might have passed over the lines of six different companies and consequently been included as six passengers; also the figures included many millions relating to companies not at present operated by the Railway Executive.

The proper comparison for originating passengers is, 1913, 1,331,000,000; 1949, 993,000,000—decrease 338,000,000. This, although serious enough, is not so surprising when, as Mr. Roberts reminds us, commercial motor transport was almost non-existent in 1913. The great bulk of the loss in passengers is in short-distance traffic now conveyed more conveniently as well as more cheaply by bus, and fare reductions by the railways would have little effect in recovering this traffic to rail, but would result in a serious further loss of revenue.

I am unable, at present, to verify Mr. Roberts's figures on goods tonnage, but should not be surprised if they were as inaccurate as his passenger figures; even if 364,000,000 for 1913 is correct, this is *not* 100,000,000 tons more than dealt with at the present time, as stated by Mr. Roberts.

I notice Mr. Roberts repeats his erroneous assumption based on the results obtained by reducing fares on a nearly defunct branch line at Sunderland. The fallacy of this assumption was, I think, shown up quite conclusively in my reply to him in your issue of April 28, 1950.

We are all used to Mr. Roberts's "red herrings," but for sheer irrelevance to the subject under discussion, namely, the efficiency or otherwise of control on British Railways, his comparison between the cost of conveying workmen to America some half-century or more ago and that of conveying a passenger from London to Scotland today, must surely "take the biscuit."

Yours faithfully,

J. H. LAUNDY

Rustington, Sussex

Seat Reservation Facilities

January 8

SIR,—In regard to the paragraph on seat reservation facilities in your January 5 issue, I note (with joyful anticipation!) that opposite seats will have the same number distinguished by the words "back to engine" or "facing engine." I can imagine theory taking its usual tumble when opposed to practice.

The intelligence of the average travelling public being what it is, I am sorry I shall not be present on February 1 at, shall we say, Leeds Central as the "Queen of Scots" pulls in. On the through trains from Sussex to the Midlands and North we can expect musical chairs at Eastbourne, Brighton, and Redhill. Our sympathy goes out to the simple souls who are certain the locomotive which has brought the empty coaches into the terminus has something to do with the propulsion of the train.

Yours faithfully,

JOHN W. RATTRAY

Kings Mead, Seaford

Streamline Success

January 15

SIR,—The short answer to Mr. C. J. Allen's long epistle in your January 12 issue, is that every statement in the letters, which he misinterprets, is correct. Most of the streamlined trains pay in varying degrees. They are placed ordinarily on lines of heavy traffic density. Some of them are merely diesel-hauled replacements of steam expresses which were popular in their day. Much of the traffic now carried is not new business and all the net earnings of the streamliners are insufficient to save passenger services, operated over 156,000 route miles from being "in the red." The official figures of the growing loss in dollars cannot be gainsaid.

The downward trend in U.S.A. railway passenger mileage tells the same story. The 1949 volume of rail travel was 14 per cent. below 1948 and 23 per cent. under 1947. The decline continued in the first half of 1950, but in the fall of last year the Korean War and defence programmes led to a large amount of travel on Government service which may have stopped the rot for the time being. A poor outlook if the railways can prosper only after a state of national emergency has been declared!

Mr. Allen takes up a good deal of space with pointless queries about L.N.E.R. high-speed trains. A brief letter on page 65 of your January 21, 1949, issue dealt with the successful working of these trains. The building and running of the "speeders" was a fine bit of enterprise, but in earning power they could not rival the heavily-loaded expresses between Kings Cross and Newcastle or between Euston and Liverpool and Manchester. The "speeders" were limited to some 220 passengers and many of the people who paid supplementary fares for seats were previously regular travellers by other trains.

In 1938 all the high-speed trains ran for the first time throughout the twelve months. The small effect they had, either directly or indirectly, on passenger business was clear from the 1938 returns which showed that the number

of ordinary passenger journeys originating on the L.N.E.R. was 8 per cent. below the 1937 figure, with a drop of nearly 4 per cent. in the corresponding receipts. No sign of success there, "streamliner" or otherwise!

Yours faithfully,

R. BELL

Frognal, N.W.3

Colour-Light Signals

October 18

SIR,—Is it the intention of British Railways to replace all semaphore signals by colour-light signals? If so, do they intend to equip first the lines on which fog causes the greatest delays?

These questions have been prompted by the report of Brigadier C. A. Langley on the collision between an express and a goods train on March 7 last near Witham Junction. The report* states: "Driver Birch did not make any brake application at the Witham Junction distant (640 yd. from the point of collision), which was undoubtedly at 'caution', and I cannot but conclude that he also passed the Rivenhall distant and stop signals at 'caution' and 'danger' respectively". The report also draws fresh attention to the need for automatic train control at distant signals.

In my opinion the installation of colour-light signalling leads to better timekeeping and much greater safety compared with semaphores, and I feel that it should have priority over automatic train control—chiefly for the reason that every signal can be seen, even in thick fog, in daylight, or in the dark. It is more than probable that the accident mentioned above would not have occurred had the signalling been of the colour-light type.

I used to travel a great deal between Stalybridge and Manchester. If there was the slightest suspicion of fog we could rely on the trains being late if they came from Leeds or Liverpool. Presumably the same condition exists today—a condition that could have been alleviated 20 years ago by colour-light signalling throughout that route. There must be similar black spots in many districts in this country. Even under conditions of clear visibility there are many advantages to be gained by the use of colour-light signals.

Yours faithfully,

G. RICHARD PARKES

Montcroft, School Lane, Formby

Cook's and the Railways

January 10

SIR,—The interesting article entitled "Railway Centenaries of 1951" in your December 29, 1950, issue, recalls the associations of Thos. Cook & Son Ltd. with the railway companies of more than a century ago—we celebrate our 110th anniversary this year—and also the leading rôle played by Mr. Thomas Cook in persuading 165,000 people to travel by rail to the Great Exhibition of 1851.

Ten years before the Exhibition, Mr. Cook launched the first publicly-advertised railway excursion. He persuaded the Midland Railway to place a special train at his disposal to carry 570 men and women at a fare of one shilling for the double journey of 24 miles from Leicester to Loughborough. So much interest was aroused that Mr. Cook received many enquiries from other societies, asking him to plan and conduct excursions in different parts of the Midlands.

He developed his arrangements with the Midland Railway and, in 1845, organised his first tour to Liverpool, North Wales, Isle of Man and Dublin. So great was the demand that many of the tickets were resold at twice the original fare. By 1850 Mr. Cook was working closely with almost all the railway companies of the Midlands, the North of England, and some of the Southern lines. Interchanges of traffic were effected between several companies which had begun to make excursion traffic a regular feature in their travel arrangements.

The great London Exhibition of 1851 gave Mr. Cook the first of many major triumphs. John Ellis, then Chairman of the Midland Railway, asked him to organise cheap excursions from the Midland Railway stations to London for the Exhibition. Cook accepted the offer. On a Monday morning in May he got up at 5 a.m. to see the first train off, carrying excursionists from Leicester to London and back for 15s.

The Great Northern was eagerly competing with the Midland. Four hours after Mr. Cook had risen that morning, the fare to London from Bradford, Leeds, Sheffield, and other points had fallen to five shillings, and remained at this level till the close of the Exhibition in November. During the busiest part of the season Mr. Cook was travelling day and night on five days of the week.

Since Thomas Cook's first excursions, travel has become a major factor of national and international significance. No small part in this development was played by Mr. Cook, whose desire to ensure a good attendance at a temperance meeting started an association with the railways of Britain which today forms a permanent feature of Britain's travel system.

Yours truly,

A. G. MORLEY
Press Officer

Thos. Cook & Son, Ltd., Berkeley Street, W.1.

Closing of Branch Lines

January 10

SIR,—In your January 5 issue, Mr. Frederick Smith said "the closing of branch lines is only one aspect of the integration question." At a recent debate at the Institute of Transport several speakers referred to the "closing of unremunerative branch lines," and so it goes on. I always long to ask the authors whether they or their households regularly use branch lines—with which should be included main-line local services. Should the answer be "Yes," I would enquire what their comments would be:—

(*a*) on being told on reaching the bus station on a dirty night that the bus service was cancelled because of the state of the roads; or

(*b*) having an important connection to make or appointment to keep, and being told by the conductor that the bus was full and the next one would be in one (or two) hours.

Would it be the soft answer that turneth away wrath?

I understand that a public enquiry is held before closures take place and should be interested to know how many, on an average, of the witnesses at such enquiries are regular users of the line under sentence. Is it correct that scarcely one of the witnesses at the meeting which decided the closing of the Lynton & Barnstaple Railway was a regular user of the line?

Is it not strange, too, that the slogan is always the defeatist "closing of unremunerative branch lines" and never the more sensible, though less suitable as a slogan, "investigation of unremunerative branch lines to make them pay."

Admittedly there are some lines which could never pay now because of change in the direction of flow or incidence of the population, but there are many more which could certainly be made to pay a good dividend if the receipts could be put up and the expenses down. The first can be done by providing a regular-interval service of fast diesel or similar railcars, powerful enough to pull a trailer if required, without reference to main-line connections at the junction point, which account only for a small proportion of the traffic. As to the second, now that we have a nationalised railway system, surely the Railway Executive, the unions, and the Ministry of Transport can agree for such services on (*a*) two-men train crews; (*b*) all except the most important stations to be unstaffed and tickets (for only local journeys) to be issued and collected by the guard; and (*c*) simplification of signalling on branch lines by adopting telegraphic line clear with paper tickets as in Argentina and other countries.

Yours faithfully,

H. L. HAWKER

7, Princes Square, W.2

* Summarised in *The Railway Gazette*, January 19 issue

THE SCRAP HEAP

Brighter Railways Movement

A brighter railways movement is hinted at from Hungary in a report that groups of students are to assemble on stations and sing "couplets critical of the Western democracies" for the entertainment of passing travellers.—*From "The Manchester Guardian."*

Hot Steel Transported by Rail

An experiment believed to be the first of its kind attempted in Canada was successfully carried out recently through the co-operation of the Dominion Steel & Coal Corporation and the Canadian National Railways. A hot steel ingot was shipped from Sydney, N.S., at 1,800° F. and arrived at the company's plant at New Glasgow, N.S., ten hours later at a temperature of 1,575° F. The ingot, just cool enough to solidify, was placed in a cast-iron box insulated with a pre-moulded Vermiculite for its 200-mile C.N.R. journey.

"Agenoria" on Show

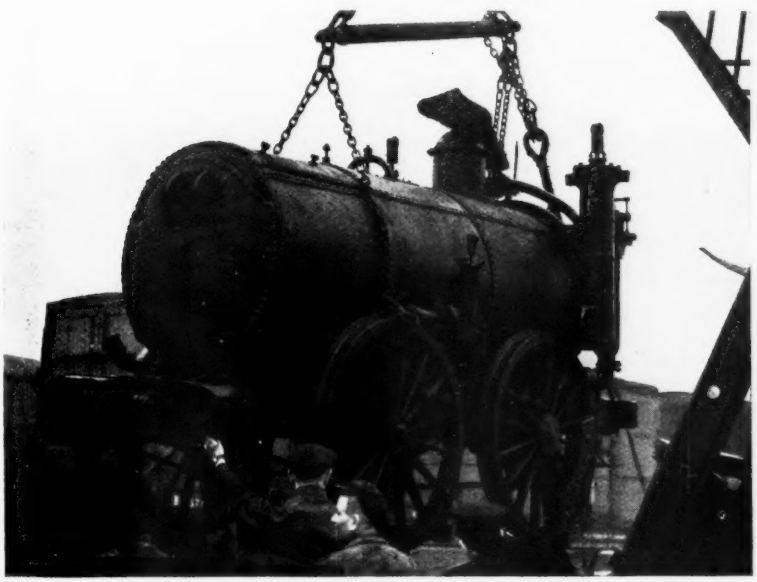
A British-built locomotive, the *Agenoria*, first put in steam more than 120 years ago, was hauled by road on January 5 from Kings Cross to the South Bank site, where it will be seen by visitors to the 1951 Exhibition.

The engine was built at Stourbridge in 1829 by Foster, Rastrick & Company, and was one of four sister engines. The others were named *Delaware*, *Hudson*, and *Stourbridge Lion*. Only *Agenoria* remained in this country, running on the Shutt End Colliery line until well after the middle of last century. The other three were exported to America, and the *Stourbridge Lion* had the distinction of being put in steam there in 1829—before the *Rocket* competed in the famous Rainhill Trials.

Its lofty chimney had to be removed during transit and for exhibition at the South Bank, and is being replaced by another, similar to that carried by *Stourbridge Lion*. *Agenoria* has been lent to the Festival of Britain by the Science Museum, South Kensington, and was on loan to the York Railway Museum.

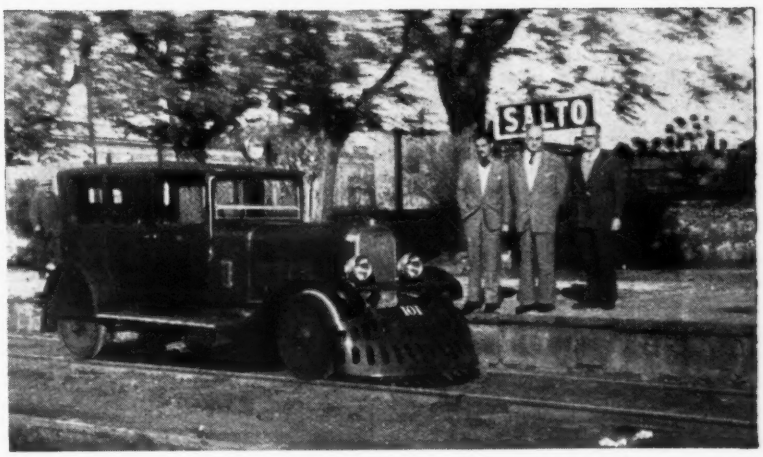
A Signal Success

Seven passengers lay on the railway line to stop an express at Olcenngo, near Vercelli, Italy, after the stationmaster refused to signal it to halt. It stopped.—*From the "Daily Graphic."*



Unloading "Agenoria" at Kings Cross (see paragraph above)

"Rail Motor" in Uruguay



Old Sunbeam car which is used as an inspection vehicle by the Central Railway of Uruguay

Photo] [*N. A. F. Harvey*

Standardised Locomotives

The B.R. locomotives
Of standardised design
Have passed the stage of blue-print
And soon will reach the line;

Embodying all the features
That recently have proved
Of value in propulsion
Each time an engine moved.

Their coal-per-mile consumption
Will show an all-time low,
While water from the tender
Will come in gentle flow.

Now I have some ideas
I'd like to introduce,
The back-room boys can have them
If they're of any use.

Let safety valves be fitted
With silencer so rare
That would provide the answer
To nervous traveller's prayer.

And give them deep-toned hooters
Melodious to the ear,
That in the early morning
Would sound in lowest gear.

I'd like the brass-topped chimneys
That gave the G.W.R.
A name for handsome engines,
"King," "Castle," "Saint," and "Star."

Could cab-sides be constructed
Of fairly wide meshed wire,
So that the platform "spotter"
Could see into the fire?

We then would have an engine
That we could put on show,
And which would be a credit—
Provided it would go.

R. M.

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

SOUTH AFRICA

Financial Position

The latest published figures on the working of the railways and associated services for September, 1950, reflect an overall surplus of £602,299. By September, the sixth month of the current financial year, the accumulated surplus on the working of all services had risen to £2,092,470. Taking the various services separately, the railways returned a surplus on working of £681,676 for September last year. All the other services, except airways, which had a deficit of £209,500, showed surpluses of varying amounts, the largest of which was that for the harbours amounting to £248,800. The total revenue for the month was £9,096,488 and expenditure £8,374,106. The surplus was reduced by net revenue appropriations amounting to £120,083.

Container-Trailers

Some months ago an experiment was tried with container-trailers, described in our September 29, 1950, issue. The containers were specially designed for operation as ordinary road vans and so constructed that they could be transported by railway wagon over any distance. The flexibility of road transport and the economic advantage of rail conveyance have therefore been successfully combined in this vehicle for the first time in South Africa. The entire vehicle may be used for one consignment or for two or three, as hinged partitions allow sub-division. Applications for container-trailers have been so numerous that it has been decided to increase the number in service. The capacity is being increased from three to five tons.

NEW ZEALAND

Overseas Interest in Rimutaka Tunnel

In recent weeks representatives of important firms of constructors have been investigating the Rimutaka Tunnel project with a view to tendering for the work. Tenders close shortly. In the meantime the Ministry of Works has pushed preliminary work ahead on a large scale and pierced the range on both sides to each rock face. This aspect of the work appealed to the United States engineers, who represent six companies. They say it is the first time that they have found such work under way when asked to tender and indicated that the system appealed to them. One of the companies is the Utah Construction Company, at present working in Australia, on the £10,000,000 Eilder Dam scheme. The Works Department also expects that at least one Australian firm will view the work

Tenders have been called for the main tunnel of 5½ miles. In addition to this tunnel, the project includes piercing the Maoribank Hill for 26 ch. and another ridge at Pigeon Bush end for 13 ch. Tenders for the preliminary earthwork have been called. A township consisting of rows of huts for single men, and nearby the houses of married workers, has sprung up at the western end of the tunnel to swell the population of the village of Mangaroa.

More buildings have been erected near the western portal. One houses three large generators which will supply the necessary power. Another is the fitters' workshop, and, nearby, electric locomotives under cover to change batteries, leaving the spent batteries at the re-charger. At the Western end the hill has been penetrated for 1,000 ft. It was expected to reach the rock face earlier, but only a few yards now remain before it will be met.

TASMANIA

New Agency in Launceston

In keeping with the Government's policy of stimulating railway travel, a travel agency has been opened in Launceston. With the same object, a public relations officer has been appointed and an intensive newspaper and radio publicity campaign has been begun. A notable increase has taken place in passenger traffic which was particularly heavy during the Christmas and New Year holidays.

Bell Bay Line Recommended

A railway to Bell Bay from Launceston has been recommended by a Joint Committee of both Houses of Parliament. The estimated cost is £720,000. The Committee suggested that if the proposal was approved immediate action be taken to request the Federal Government to bear a proportion of the capital cost.

It was also recommended that heavy haulages by road exceeding 30 miles be required to contribute towards road capital costs and maintenance commensurate with similar charges debited against railway operations. The Committee was not aware of any deep-water port associated with an industrial development equivalent to that envisaged at Bell Bay, which was not served by railway.

Houses for Railwaymen

The provision of homes for railwaymen at Hobart, Launceston, Devonport, and Conara Junction is being speeded up. This incentive is felt to be essential to reduce the acute staff shortage. Existing properties are being bought and new houses being constructed by contract.

FRANCE

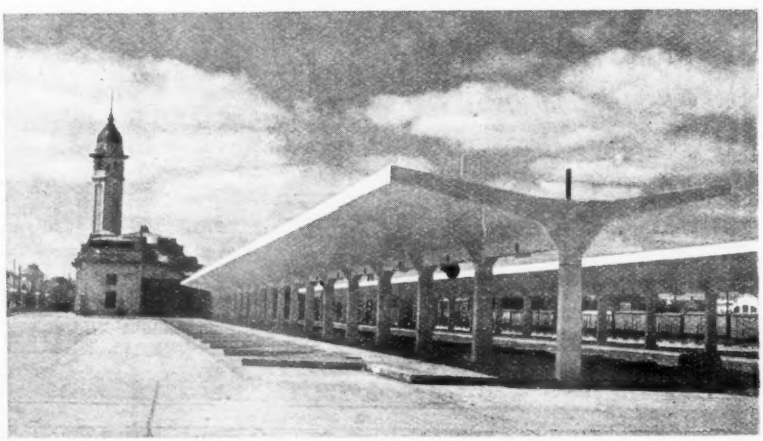
S.N.C.F. Traffic Declines

S.N.C.F. traffic reports for 1950 show all-round declines. The number of wagons loaded, including transport services, amounted to 13,400,000 against 14,200,000 in 1949, a decrease of 5·3 per cent. The greatest decline, 12·7 per cent., was in the Western region. The Mediterranean came next with 6·5 per cent. The Nord decrease was lowest at 3·3 per cent.

Taking commercial traffic alone, with transport services excluded, the number of wagons loaded in 1950 was 11,491,773, against 12,189,889 in 1949, a decrease of 598,116 wagons. Loaded wagons entering France from abroad showed a slight decline at 779,519, against 810,445 in 1949.

Railway operating revenue in 1950 amounted to 261,600 million francs (about £261,600,000) against 266,700 million (about £266,700,000) in 1949. In comparing these two totals, it should be

Railway Station as Bus Terminal



The former Santa Fe Station in Rosario, Argentina, as converted to a terminal for long-distance buses (see paragraph in January 12 issue)

recalled that there was a substantial rise in passenger fares early in 1950.

In regard to the S.N.C.F. reorganisation plan, the French Premier recently stated that the government hoped the plan would be discussed in parliament before the end of this month.

IRELAND

Continuance of Strike

The strike by members of the Irish Transport & General Workers' Union employed by Coras Iompair Eireann is now in its sixth week and the prospects of a settlement are still remote. The revised emergency timetable is being maintained and more than half the normal passenger trains are running. These are carrying much more than their usual complement of passengers and the inconvenience to travellers is therefore comparatively small.

There is a complete cessation of railway goods services and this has resulted in some disruption in trade, particularly in the livestock business. Supplies of fuel oil and petrol are short in many districts, and dockers at Dublin and Cork are not handling merchandise which would normally be carried on the C.I.E. system.

Parcel traffic, suspended since the beginning of the strike, has now been resumed, but is restricted to 56 lb. per consignment. Coal supplies for the company are cut off, but the stock on hand will enable the emergency timetable to be operated for some time.

The Lord Mayor of Dublin recently held a conference which was attended by provincial mayors and representatives of Coras Iompair Eireann and the I.T. & G.W.U. The talks lasted for nine hours but no agreement was reached. There now seems little hope that the parties can be brought together soon and the strike may drag on indefinitely.

Wagon Building at Limerick

In December, C.I.E. inaugurated a decentralisation scheme whereby 100 wagons are being assembled at Limerick Locomotive Works. Forty-four wagons have been turned out in one week.

In the past, both wagons and coaches were built at Limerick. At the inaugural ceremony Mr. J. J. Johnson, Assistant Chief Mechanical Engineer at Inchicore, said that C.I.E. had set a target of 500 wagons a year and that as much of the building as possible would be carried out at Limerick.

Publications Received

"*Southern Railways Magazine*" (India): First anniversary special number, July, 1950. Published in Tanjore, Southern India: 78 pp., *plus* 52 pp. on road and air transport supplements. 9½ in. × 7 in. Illustrated. Price, 8 annas.—This, the first birthday number of the monthly publication, contains 23 messages of congratulation, received from the Ministry of Transport & Railways, India; the Commander-in-Chief, Indian Army; the High Commissioners for the United Kingdom, Canada, and Australia; the Governors of six provinces; and six General Managers of railways. Brief notes discuss general railway subjects, including the regrouping of the systems, the "WP" locomotive, and the Railway Inspectorate. Other features are articles on "Our Railways," by the Minister for Transport & Railways, "Mechanisation in Maintenance," "Modern Turbine Locomotives," "Block Signalling," and other subjects. Most of the illustrations are in the supplements, but the whole publication is well produced.

Glued Laminated Timber Structures. Constructional Research Bulletin No. 5, by R. T. Walters, A.R.I.B.A., A.M.I.Struct.E., issued by the Timber Development Association Limited. 11 in. x 8½ in. Stiff paper cover. 12 pp. Profusely illustrated. Obtainable from the association at 75, Cannon Street, London, E.C.4. Owing to the shortage of timber, this country is not at present keeping abreast of the times in this form of construction, which is developing rapidly in more favoured lands. As this bulletin describes, glued laminated roof members are being used economically and effectively in arches, trusses and other long-span forms in America, Sweden and elsewhere. This form of construction is also found in umbrella platform roofing and in continuous bridge girders with spans up to 65 ft. The largest example of it in platform roofing is at the Central Station in Stockholm, and another example forms the subject of one of the excellent illustrations in the bulletin. The largest structure of this kind in the United Kingdom is probably the Waterloo entrance to the Festival of Britain, which has glued parabolic laminated arches with a span of 101 ft. and a height of 62 ft. It is the use of synthetic resin adhesives which makes possible this form of construction, as they are extremely resistant to moisture and immune from attack by mould and bacteria. Other technical details and the various techniques developed by different firms are simply explained in the bulletin, which is excellently produced.

Principles and Practice of Radar. H. E. Penrose and R. S. H. Boulding. London: George Newnes Limited, Tower House, Southampton Street, Strand, W.C.2. 8¼ in. × 5½ in. × 1¼ in. 708 pp. Illustrated. Price 42s.—Now in its third edition, this book retains its valuable characteristics as a source of information on radar fundamentals, with many diagrams of basic circuits which help the reader to understand the intricacies of complete equipments. At the same time more space has been given to the increasingly important subject of micro-wave technique, now superseding the use of longer wavelengths for many purposes. A chapter has been added to the present edition of this book in which several commercial radar installations are described and illustrated.

Locomotives of the Great North of Scotland Railway. By M. C. V. Allchin. Southsea, Hants.: Railway Hobbies Limited, 86, Essex Road. 8½ in. × 5½ in. Illustrated. Paper covers. Price 2s. 6d.—This is a further addition to the series of registers of locomotives of the smaller constituent companies. It covers every engine that was included in the Great North of Scotland Railway stock. The main lists are given in numerical order of the running numbers, and subdivided into three chronological sections. Details given include wheel arrangement, the builder and building date, works number, and date of withdrawal. Engines absorbed from the Deeside, the Morayshire, and the Banff Portsoy & Strathisla Railways are listed. Other sections cover G.N.S.R. and L.N.E.R. classifications, principal dimensions, renumbering to date, and a number of minor details. Twenty-four illustrations covering representative types of locomotives afford life to the mass of facts.

1950 *Illustrated.*—This brochure published by Dorman Long & Co. Ltd., Middlesbrough, reviews the activities of the firm during 1950, both in this country and in South Africa. There are some excellent photographs showing the stages of progress made in the Lackenby steelworks development scheme which has a planned weekly output of 10,000 tons of ingots. Further development schemes will include the provision of rolling equipment to enable the Cleveland, Lackenby, and Redcar works to become one continuous series of iron and steel producing units. Also included is a graph showing the consumption of electricity and fuel oil between 1946 and 1949 and the output of rolled steel over a similar period.

Sludge Removal from Locomotive Boilers.—A brochure has been published by Houseman & Thompson Limited, Newcastle-on-Tyne, 2, describing the use of the Houseman H.L.H. automatic combined desludging and deconcentrating valve as a medium for removal of precipitated scaling salts deposited as a sludge, instead of scale, by the use of D.M. boiler treatment. The action of this treatment is to trap precipitated scaling salts and render them in such a condition that they will not adhere to firebox water spaces or boiler barrel. It is claimed that the removal of the sludge by the use of the Houseman H.L.H. valve overcomes the need for frequent use of the main blowdown valve and prolongs periods between boiler washouts. The publication, which is illustrated, contains directions for installing and method of operation, together with practical tests carried out.

XUM

Cab Equipment for Electric Locomotives

Variety of practice in the layout of apparatus and the form taken by the principal controls

Cab of one of the English Electric-Vulcan Foundry 3,000-h.p. 3,000-volt locomotives supplied to the Estrada de Ferro Santos a Jundiai, Brazil

NOW that the first large scale use of electric locomotives in this country is within measurable distance, the question of driving cab equipment and layout assumes more immediate interest. British Railways have already laid down some guiding principles for steam locomotive cab design. In due course it may be considered desirable to do the same for electric traction.

At present the only electric locomotives in regular main-line use on British Railways or London Transport are the Southern Region Co-Co class and the Bo-Bo series on the Metropolitan Line of London Transport. The latter are really an adaptation of multiple-unit equipment, having automatic acceleration and a limited number of notches. In the Southern Region electric locomotives the motor-generator control system (described in *The Railway Gazette* of March 25, 1949) does not involve different motor combinations, but the number of notches (26) is in line with modern practice for locomotives with resistance and series-parallel control. There is the important difference that in the motor-generator system all notches are running notches.

The master controller of the Southern Region locomotives is operated by a handwheel, which selects the 23 full-field and 3 weak-field notches consecutively in its arc of movement. In these circumstances a handwheel is more convenient than a horizontal lever, for the arc through which a lever can be moved without its taking up awkward angles is limited. For this reason a handwheel would seem to be desirable in a modern multi-notch, series-parallel system if it is desired to carry out the full accelerating process by the continuous movement of one control. An example can be seen in the recent English Electric-Vulcan Foundry 3,000-h.p. locomotives for Brazil (described in *The Railway Gazette* for November 4, 1949). Here the 35 accelerating notches in series, series-parallel and parallel (including the two weak-field steps in parallel) are selected in turn by rotation of the controller handwheel. Selection of weak-field in series or series-parallel is carried out by the reverser handle, so that these steps can be omitted during acceleration if desired.

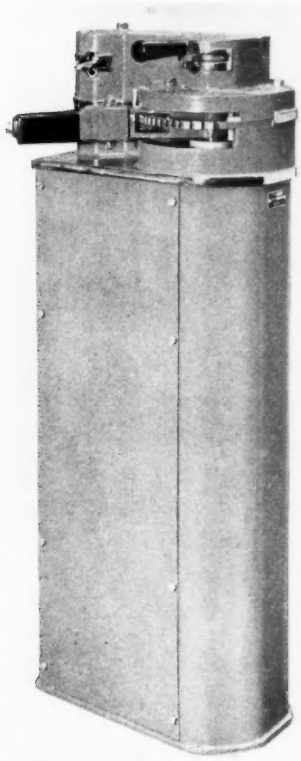
While the movements the driver has to make are simplified by effecting the motor combination changes with the accelerating control itself, the construction of the controller is complicated to some extent. Another factor likely to limit the adoption of this system is the large number of notches in some modern control equipments. The latest 1-Do-1 locomotives, with electrical equipment by Oerlikon, supplied to the Netherlands Railways have 48 full-field and 12 weak-field notches in the full accelerating sequence. Even if weak-field selection in series and series-parallel was transferred to a separate lever as in the example quoted above, there would still be 52 notches to be accommodated in one rotation of the handwheel. In these locomotives, therefore, the main drum of the controller selects only the 16 full-field and 4 weak-field notches possible in any motor combination, the transitions being effected by another handle.

Although the notching control in these Netherlands Railways locomotives takes the form of a handwheel, a lever can be used equally well in similar circumstances. For example, the accelerating lever quadrant in the Metropolitan-Vickers "3E" class locomotives of the South African Railways provides 18 notches (including the three weak-field steps available in series, series-parallel or parallel), the motor combination being selected by a separate control.

A form of cab layout frequently seen groups the controls in some form of desk structure in front of the driver's seat. There may be occasions when such an arrangement is thought to afford too little leg room for comfort; or, if there is sufficient leg room, the driver may have to reach forward uncomfortably in manipulating the controls. An alternative arrangement is not to build the master controller into a desk, but to mount it separately forward and to one side of the driver. A layout of this kind is adopted for the handwheel type of controller in The English Electric Brazilian locomotives already mentioned, and it is particularly suitable for the horizontal lever type of control, which can then be arranged to fall very conveniently for the driver's grip. Brake controls can be mounted similarly on the driver's other hand. A further example of this arrangement is the cab of the recent G.E.C. mixed traffic locomotive for the Estoril Electric Railway of Portugal.

Driver's Vision

A consideration to be borne in mind when deciding the precise position and height of the driving seat is the driver's line of sight. This should reach the track not less than 18 to 20 ft. in front of the cab. If he can look down at too steep an angle his eyes are likely to be distracted by "sleeper flicker," while the sense of being in the very forefront of the locomotive can be psychologically disturbing. A "nose" in front of the cab at each end of the locomotive, sometimes regarded as being mainly for the sake of appearance although it may house certain items of equipment, can be useful in



G.E.C. locomotive type controller designed for individual mounting in locomotive cabs where a desk layout is not used

removing a sense of being unprotected and is occasionally insisted on for that reason.

There is general agreement that for the long runs associated with locomotive duties the dead man's device should be foot-operated for comfort, and a sloping treadle is probably the easiest type to keep depressed. When this provision for one-man operation of the locomotive is made, it follows that a second control of similar type must be fitted on the off side so that the driver can cross the cab when necessary for observing signals or other reasons, and the functioning of both controls must have sufficient delay to allow him to do so without the brakes being applied.

In the Netherlands Railways 1-Do-1 locomotives an auxiliary controller governing the first few series notches is fitted on the off side of the cab for convenience in shunting, but in locomotives designed specifically for shunting duties it is usual to provide full control facilities on both sides by installing the master controller drum horizontally, with a bevel drive from a handle at each end.

The large front windows characteristic of electric locomotive driving cabs make sun visors to prevent glare of great importance. After dark, instrument lighting must be adequate for seeing dials and pointers but not bright enough to be distracting or to cause difficulty in adaptation to the darkness outside after a glance at the meters. A satisfactory system is for the lamps to be in the enclosure behind the instrument panel, the light being diffused evenly over the dials through "Perspex" arranged round their circumference. A dimming control should be provided so that the lighting can be adjusted to suit the driver's convenience.

Sometimes it is felt that a lighted instrument panel immediately below the front window may be a source of distraction when driving at night. An alternative arrangement is to paint the pointers and calibrations with a substance that fluoresces in the ultra-violet radiation from a suitably positioned lamp. Such a lamp may have a special bulb which only allows the ultra-violet to pass, emitting no visible light; or an ordinary lamp may be used behind a filter with similar characteristics. This system has been used abroad, and in some diesel-electric shunting locomotives in this country.

Accurate Control of Light

In connection with the general illumination of cabs, attention may be drawn to developments in the accurate control of light from fittings with special reflectors and louvres. The problem of lighting a desk and its immediate surroundings without causing reflections in the windows to interfere with the view of events outside, has had to be tackled in airport control towers. Experiments on similar lines might increase the comfort of night driving conditions in locomotive cabs.

Regarding the instruments themselves, the main ammeter is at least as important to the driver of an electric locomotive as the pressure gauge to the steam driver. The zone within which the current must be maintained during acceleration should be clearly shown by a red sector on the scale or other distinctive marking. Other calibrations may show the currents corresponding to the 1-hour and continuous ratings as a guide to effecting transition. When regeneration is used, the regenerated current can be indicated on the main ammeter by a sector of the scale reading from zero in the opposite direction to the power current calibrations.

The main voltmeter is equally important as an indication of power being present on the line. Correct operation of the motor-generator supplying L.T. for control and other purposes is usually shown by a centre zero ammeter in the battery circuit to indicate the charging or discharge rate. These, together with a speedometer, are the essential instruments, which may be supplemented by a variety of indicating

Desk type layout of Oerlikon electrical equipment fitted in the cab of a Netherlands Railways 1-Do-1 locomotive

devices to confirm the functioning of various circuits and items of equipment.

Provision for indicating and checking wheel slip has been made in a number of recent locomotive designs. In the first of the Bo-Bo class for the Manchester-Sheffield scheme the driver has a control which weakens the fields of the motors driving the leading axles of both bogies if slipping occurs, and when this is operated a warning light comes on to remind him to return to normal when his train is satisfactorily under way. Various means of detecting slip were described in an article in *The Railway Gazette* of February 24, 1950, most of which might be associated with automatic field-weakening on similar lines. A system reported to have given satisfactory results in practice is incorporated in the Netherlands Railways 1-Do-1 locomotives, in which a small generator is driven by each of the four pairs of traction motors. The outputs from the generators associated with adjacent axles oppose each other, and being equal so long as no slipping occurs, give no reading on the scale of a centre zero voltmeter. If one axle slips, the output from its generator increases and deflects its voltmeter needle, whereupon the driver notches back until balance is again obtained. With this arrangement two meters in each cab are sufficient to show slip at any of the four driving axles.

Another instrument that is sometimes considered a necessary item of cab equipment is a kW-hour meter to record the actual power used. Some railway administrations pay bonuses to drivers for keeping within a specified consumption, a scheme which is calculated to promote skill in handling a locomotive. Such meters are also specified by some railways for motor coaches, although automatic acceleration must limit the extra economy that can be exercised except by coasting.

It is evident from the variety of practice quoted in this article that in choosing a standardised cab layout it would be necessary to decide between several features which are supported with equal vigour and conviction by their adherents. The working of all classes of traffic with a locomotive stock as large as that on order for the Manchester - Sheffield - Wath scheme may give guidance in the shape of a fund of first-hand experience on a scale not available in this country before.

Development of Electrification in Japan

Further main-line conversions are projected, but are delayed by world economic conditions and shortage of materials

Electric train on Tokaido main line, with Fujiyama in background
Photo] [Notre Métier

LIKE several other countries, Japan has formulated plans for extensive main-line electrification since the war. Economic conditions have prevented much progress being made with the projected conversion of 2,113 route-miles, but one hydro-electric plant is being built as a contribution towards the power requirements of this programme. Use of Japanese resources in water power is a necessary step towards economic recovery, and railway electrification is a means of applying them that has received an impetus from the coal shortage of the post-war years.

However, a difficulty to be considered in Japan is the prospect of droughts curtailing hydro-electric output, while at the present time reduced coal production may restrict the power available from steam-driven generators.

According to a report from a Japanese correspondent recently published in *Notre Métier*, the system now operated by the Japanese Government Railways includes 1,016 miles of 3 ft. 6 in. gauge electrified line, or approximately 8 per cent. of the total. An overhead 1,500-V. d.c. system is employed. The principal electrified main line is part of the Tokaido Route. This was developed from the Tokyo district electrification of 1910, which was extended westwards from Yokohama to Numazu in the 1920s. In our May 26, 1950, issue several Japanese-built electric locomotives for main-line service were illustrated, but it may be recalled here that at the beginning of the Tokaido scheme orders for 36 electric locomotives were placed in Great Britain. These were supplied by The English Electric Co. Ltd. and comprised 28 Bo+Bo machines of 1,200 h.p. together with eight of a 2−Co+Co−2 class with six motors each rated at 275 h.p. (continuous) and 306 h.p. (1-hour).

The latter locomotives had electric camshaft control. They measured 69 ft. 7 in. overall and weighed 99 tons. The mechanical parts were built by the North British Locomotive Co. Ltd. It is interesting to compare the 1,650 h.p. of these machines with the 2,520 h.p. (continuous) of the forty 3,000-V. 1−Co−Co−1 locomotives now being built by North British, with G.E.C. electrical equipment, for the South African Railways, also of 3 ft. 6 in. gauge. Several later main-line locomotives of Japanese manufacture also have the 2−Co+Co−2 wheel arrangement, and the most recent passenger design of this type, weighing 95 tons, has six motors of 368 h.p. at the 1-hr. rating.

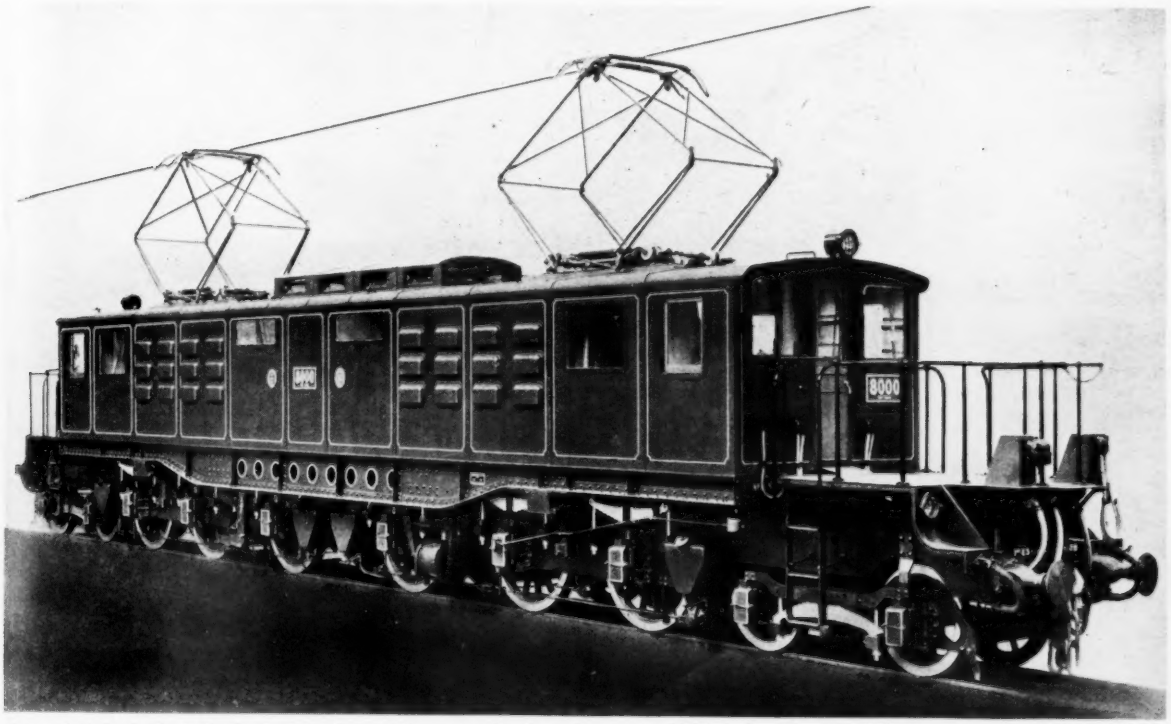
In addition to those mentioned above, 21 more Bo+Bo locomotives and 520 motor coach equipments were supplied to Japan from Great Britain between 1923 and 1930.

In February, 1950, the total stock of electric locomotives was 359. There were 1,458 electric motor coaches and 1,023 trailers. The latest motor coaches for suburban services are powered by four motors of 168 h.p. (1-hr. rating). Latterly some new motor coaches have been introduced for long-distance main-line journeys. At present the daily mileage run by motor coaches is 82,642, while locomotive-hauled trains account for a total of 34,175 miles, these figures representing 18 per cent. and 8

per cent. respectively of the total daily train-mileage.

More than half the power required by the electric services of the Japanese Government Railways is supplied by the administration's own three power stations (one of which is hydro-electric). Most of the 96 substations feeding the 1,500-V. contact lines are equipped with rotary converters, but for recent installations the use of mercury-arc rectifiers of 2,000-kW. capacity has been general. A typical modern substation, opened in 1949, has three such units, giving an output of 6,000 kW. These are connected to the two 60 kV., 50-cycle, three-phase feeders through two 7,000 kVA. transformers.

A cheap and simple form of overhead construction has been adopted since the war. The copper contact line has a cross-section of 0·17 sq. in., and is supplied from four circuits (feeders and messenger wires) each consisting of 37 strands of ·05 sq. in. copper. Wooden poles are used to support the overhead equipment. In 1948 traction accounted for 80 per cent. of the total electricity consumption of 945,675,000 kWh. by the Japanese Railways.



One of eight 2-Co+Co-2 electric locomotives supplied to Japan in 1924-5 by The English Electric Co. Ltd. All the mechanical parts were built by the North British Locomotive Co. Ltd.

Unusual Bridge over a Widened Yard

To avoid obstruction in a French marshalling yard a central 190-ft. suspension span was adopted

THE electrification of the Paris-Lyons section of the French National Railways system is resulting in the diversion over it of as much freight traffic as possible from lines not yet electrified. Consequently, several marshalling yards have had to be modernised and enlarged, including Saint-Germain-au-Mont-d'Or outside Lyons. The widening of this yard entailed some road diversions and the replacement of an existing overbridge and a near-by underbridge by a single new road overbridge of considerably greater length, and of a type not generally adopted.

To leave the spaces between the grid tracks unobstructed, it was decided that a long central span of nearly 200 ft. was essential, and to provide adequate headroom for the overhead conductor wires construction depth had also to be reduced to a minimum. To meet these requirements a type of suspension design was adopted with half-through stiffening girders having their top chords at parapet level. The complete overbridge, which was built in 1948, consists of this central suspension span 190 ft. in length, with two flanking spans each of 72 ft., and three approach spans, one of them built on a skew and 42 ft. in length to carry the roadway.

The towers or piers of the suspension span consist of twin columns 61 ft. 6 in. high and hinged at the base to allow some freedom of movement. Over them pass the suspension cables from anchorages at the backs of the abutments. Spaced at 12 ft. 6 in. centres, suspension rods hang from the cables and support the cross-girders. The latter carry three intermediate stringers on which rest the asphalt-coated slab decking.

The main or stiffening girders are 27 ft. 3 in. apart between centres, and the decking between them is divided into a central roadway 20 ft. wide and a 3 ft. 3 in. footway at each side. To prevent the transfer of stresses, other than longitudinal compression, from the main to the flanking spans or *vice versa*, Freyssinet hinges are provided where the decking rests on the suspension columns. Longitudinal expansion is allowed for by the provision of a pendulum bearing at one abutment and the hinged bases of the towers.

At the time of construction it was essential that the roadway should be brought into use before it could be suspended in the final manner. Specially strong falsework had, therefore, to be erected to carry the shuttering, the concrete deck, and the road traffic until the cables could take the load.

Rebuilt Rhine Bridge at Roppenheim

Original bridge, built about 1900 *and destroyed during the war*

Launching new central span

Bridge as restored to traffic in 1949

Rebuilt Rhine Bridge at Roppenheim

Restoration of a secondary connection between France and South Germany

Raising a damaged part of a span on the German side of the Rhine by means of special lifting gear

IN May, 1949, the first French-built permanent bridge over the Rhine was opened for traffic by the French National Railways. It is at Roppenheim, north of Strasbourg, and provides a secondary connection between the German Federal Railways at Rastatt and the French railways at Roeschwoog. Although the more important Rhine crossings were speedily restored by means of temporary bridges, most of which are still in service, no temporary bridge was deemed necessary at Roppenheim, and the permanent reconstruction could therefore be undertaken without the handicap of passing traffic.

The reconstruction included several unusual feats, such as (*a*) the lifting from the bed of the Rhine of half one of the old spans intact and weighing 750-*tonnes* section of the old bridge; (*b*) the raising by 33 ft. of one span of 500 *tonnes* weight; (*c*) the launching of another span of 1,000 *tonnes* on barges across the swift current of the river; and (*d*) the launching of a third span over 300 ft. long with the aid of a cantilevered nose and counterweight.

Original Bridge

The old bridge, built about 1900, was 7,824 ft. long and comprised four approach spans of 105 ft. on the Alsatian side; three independent main spans of 302 ft.; and five approach spans of 150 ft. on the German side. The approach spans on each side were of identical design, each consisting of twin single-track Warren truss spans 4 metres (13 ft. 1½ in.) deep and weighing 110 *tonnes*. Each of the main spans represented a tubular bridge weighing 1,000 *tonnes* with lateral trusses of varying height, and having two sets of diagonal members but no uprights.

These spans rested on masonry piers and abutments the foundations of which were carried down to about 50 ft. below the water level. The abutments as well as the end piers of the central part of the bridge were flanked with monumental towers giving a mediæval appearance.

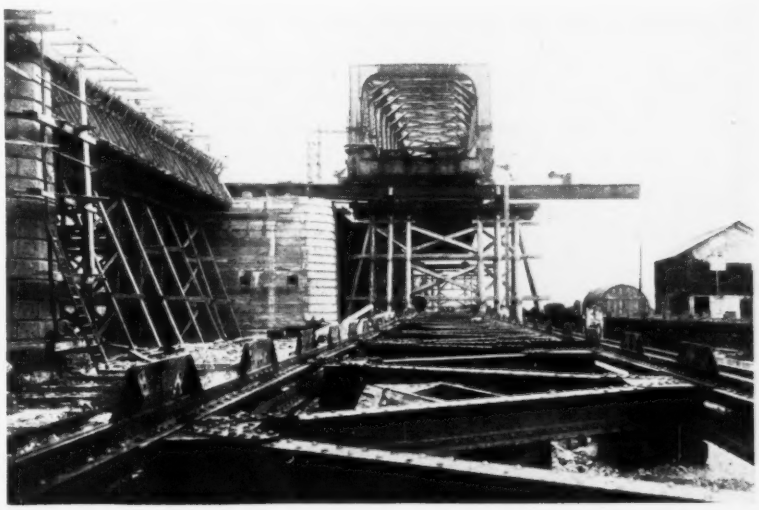
The bridge was almost completely destroyed by the retreating German Army in 1945. All that was left intact were the pier foundations and two piers. The three large spans lay broken into two, obstructing the river. Parts of the two flanking main spans appeared to be salvageable; but there was little hope of salvaging any important parts from the approach spans.

As the early clearing of a navigable channel to the port of Strasbourg was considered vital to the Allied High Command, it was decided to remove the *débris* of the main flanking span on the German side where the channel is deepest. With a view to subsequent salvage, the use of explosives or cutting burners was ruled out, and it was decided to lift the two parts of this span intact.

The heavier of the two parts, weighing 750 *tonnes*, rested with one end on the bank so that a lifting force of only 400 *tonnes* was required. Such lifting gear was not available in the country and had to be specially built in record time, by the French contractors (Etablissements Paindavoine). The special crane was mounted on a vessel which the German Army had intended to use as a railway ferry between Strasbourg and Kehl. The two parts were lifted in September, 1945.

New Central Span

For the reconstruction of the bridge, the plan adopted was to repair the two flanking main spans, and replace the central span by a new one of identical design. For the central span and that



View from French shore, showing assembled steel span before its lateral movement into position

XUM

on the Alsatian side, however, rigid gusset plates were used; the span on the German side was wholly restored to its former shape using salvageable parts from the central span.

The destruction of the approach spans was so great that it was found more economic to construct new spans of reinforced concrete. The juxtaposition of these spans and the main steel truss spans was not considered objectionable, especially as they were separated by flanking towers.

Launching Flanking Span

The main flanking span on the German side, the parts of which had been lifted on to the embankment, was repaired on land and then launched across the gap with one end carried on two barges lashed together side by side. Because of the strong current (13 ft. per sec.), this was a delicate operation. It was therefore decided to carry out the launching with the span at a low level, and to raise it to the requisite height at site.

The damaged mid-river pier was therefore stripped down to the lower level and served as an anchor point for the cables guiding the launching movement. Other anchor cables were fixed at a point some 300 ft. upstream. The position of the barges could also be adjusted at any moment by means of cable winches, and a tug boat was held in readiness on the upstream side as a further precaution. All the cable winches were controlled from a central command post. On land, the rear of the structure rested on rollers, moving on a prepared concrete track. The operation was carried out by Etablissements Paindavoine in a period of 14 hr. on May 29, 1948. The subsequent lifting of the structure to the required height was a comparatively simple operation.

Meanwhile, the main span on the Alsatian side had been lifted on to falsework and there repaired; the falsework trestles were founded in the comparatively shallow water near the left bank. Once repaired, the span was temporarily moved to one side so that the same falsework could be used to assemble the central span. When this was complete, the span was launched across the central opening as a cantilever with a temporary launching nose and counterweight.

The nose had to be comparatively narrow so as to fit the structure on the German side which was already in position by that time. Because of their dimensions, the strong rollers, designed to carry first the nose and then the main structure on the intermediate pier, had to be mounted on a bracket of the pier. The nose was constructed of parts salvaged from the approach spans, and the counterweight consisted of steel trusses, cantilevered at the rear end of the main structure and loaded with a kentledge which consisted of water containers.

Power for the launching movement was supplied by two 10-ton electric winches mounted on the near pier and acting through a ten-pulley tackle fixed to the mid-river pier. The winches installed on the German side guided the cantilevered part.

Complicated Launching Operation

The launching operation was complicated by the fact that the falsework for the flanking span was comparatively weak. The launching was therefore carried out in thirty stages, which had been carefully calculated beforehand so as to minimise the support pressures. The complete movement was carried out in two full days.

French Railway Rolling Stock

(*See also our issues of September 22 and October 6 & 13, 1950*)

A new standard eight-wheel 150-b.h.p. diesel-mechanical railcar for secondary-line services at Dreux on the Granville line, Region de l'Ouest, S.N.C.F.; 53 of these railcars are being put into traffic

RAILWAY NEWS SECTION

PERSONAL

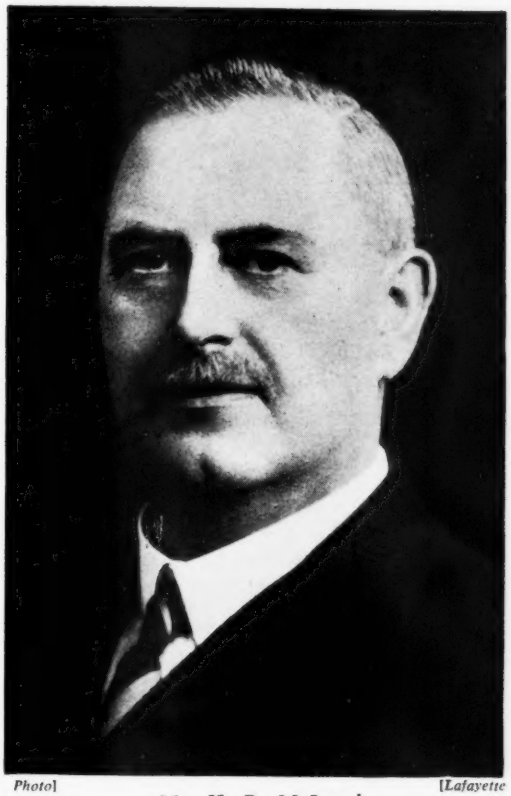
BRITISH TRANSPORT COMMISSION

The Minister of Transport has announced that Mr. Hugh Purslove Barker has accepted his invitation to become a part-time Member of the British Transport Commission. Mr. Barker is Managing Director of Parkinson & Cowan Limited and is Chairman of a number of subsidiary companies.

In addition, Mr. McIntosh was Locomotive Superintendent of the County Donegal Railways (Joint Committee) from 1939, and he acted as Locomotive Superintendent of the Belfast & County Down Railway from 1945 until that railway was taken over by the Ulster Transport Authority. Mr. McIntosh was also responsible for the running and maintenance of rolling stock on the Dundalk, Newry & Greenore Railway.

Mr. Thomas F. Brazil, Commercial Superintendent, Coras Iompair Eireann, is retiring on January 31.

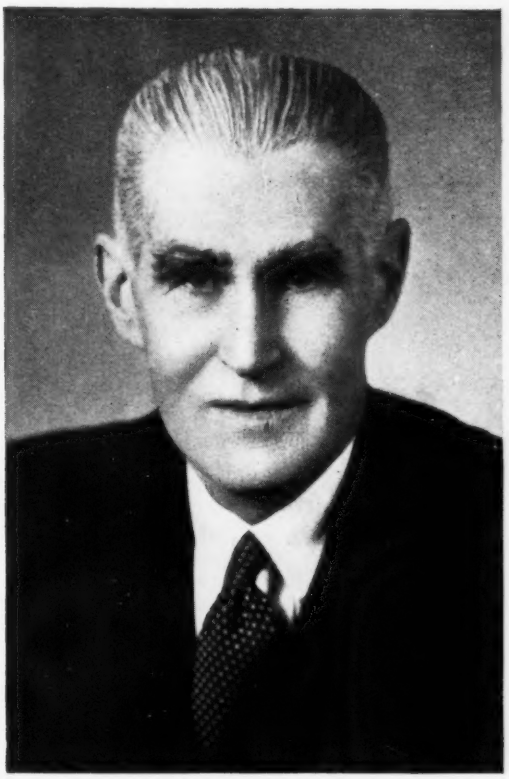
Mr. H. H. Swift, B.E., M.I.E.E., Executive Officer (Electrical Engineering, New Works & Development), Railway Executive Headquarters, who, as recorded in our January 5 issue, has been appointed Mechanical & Electrical Engineer, Southern Region, was educated at St.



Photo] [Lafayette

Mr. H. R. McIntosh

Mechanical Engineer, Great Northern Railway (Ireland), who has retired



Mr. H. H. Swift

Appointed Mechanical & Electrical Engineer, Southern Region

Mr. H. R. McIntosh, M.I.Mech.E., M.I.Loco.E., Mechanical Engineer, Great Northern Railway (Ireland), who, as recorded in our issue of January 12, has retired, joined the G.N.R. (I.) in March, 1900, as a pupil apprentice in mechanical engineering at Dundalk Works. He became Relief Shop & Running Sheds Foreman in 1905 and was appointed District Locomotive Superintendent, Belfast, in 1908. In 1919, Mr. McIntosh was transferred to Dundalk as Locomotive, Carriage & Wagon Works Manager, and became Running Superintendent in 1925. In 1933 the control of company's garages and garage staffs and responsibility for all mechanical work in connection with road motor fleet was transferred to the company's Mechanical Engineer. Mr. McIntosh was appointed Assistant Mechanical Engineer & Running Superintendent in 1934 and he became Mechanical Engineer in control of the Locomotive, Carriage & Wagon Department, including road motor fleet, in 1939.

INSTITUTION OF LOCOMOTIVE ENGINEERS

At a meeting on January 17, the undermentioned President, Vice-Presidents and Members of Council of the Institution of Locomotive Engineers nominated to fill the vacancies arising on May 31, 1951, were elected:—

President: Mr. J. S. Tritton; Vice-Presidents: Mr. K. J. Cook and Mr. R. F. Harvey (to retire May 31, 1954).

Members of Council (to retire May 31, 1953): Messrs. R. Arbuthnott, D. C. Brown, E. S. Cox, I. C. Forsyth, G. C. Gold, W. G. Hornett, S. B. Warder, L. J. Le Clair, J. H. P. Lloyd, and A. W. Manser.

The following remain in office for another year or longer:—Vice-Presidents: Messrs. R. C. Bond, A. Campbell, C. M. Cock, J. F. B. Vidal; Members of Council:—Messrs. J. F. Alcock, J. F. Harrison, Ranald J. Harvey, M. S. Hatchell, H. Holcroft, W. F. McDermid, W. L. Watson, E. Pugson, E. A. Robinson, and R. A. Smeddle.

Peter's College, Adelaide, South Australia, and at the Adelaide University, where he obtained the degree of Bachelor of Engineering. He subsequently entered the work of Siemens Schuckert in Berlin, and on the outbreak of the 1914-1918 war was interned as a civilian prisoner of war at Ruhleben. After the war Mr. Swift joined The English Electric Co. Ltd., and was employed on important electric traction schemes in Japan, South Africa, Denmark and Poland. In 1936 he joined the L.N.E.R. as Assistant Electrical Engineer, when he was chiefly engaged in the scheme work for the electrification of the lines between Manchester and Sheffield and from Liverpool Street to Shenfield. In 1941 Mr. Swift was appointed Assistant Chief Electrical Engineer of the L.N.E.R., when the department of the Electrical Engineer was separated from that of Chief Mechanical Engineer, and on nationalisation in 1948 was made Electrical Engineer (Acting), Eastern and North Eastern Regions, British Railways. He became

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Mr. G. F. Sinclair

Appointed a whole-time Member of the Road Haulage Executive

Mr. H. E. Wilson

Appointed Works Manager & Acting Assistant Mechanical Engineer, G.N.R (I.)

Mr. C. G. H. Rodgers

Appointed District Engineer, East African Railways & Harbours

Executive Officer (Electrical Engineering, New Works & Development), Railway Executive Headquarters, in March, 1950.

Mr. G. F. Sinclair, C.B.E., A.M.I.Mech.E., M.I.E.E., M.Inst.T., Chief Technical Planning & Supplies Officer, London Transport Executive, who, as recorded in our issue of December 22, has been appointed a whole-time Member of the Road Haulage Executive, is 53. He saw war service in 1916-18, and became General Manager of the Kilmarnock Engineering Company in 1926. He joined the L.C.C. Tramways in 1930, became Rolling Stock Engineer (Tramways) to the L.P.T.B. in 1933, and held responsible engineering posts until his appointment as Chief Engineer (Trams & Trolleybuses) in 1940. His services were lent to the United Kingdom Commercial Corporation for special duties in the Middle East from 1940 to 1944, and he was made a C.B.E. for duties in the Middle East and was awarded the Order of the Patriotic War, First Class, by the Presidium of the Supreme Soviet in 1945. In October, 1945, he was appointed Deputy General Manager (Road Services), L.P.T.B., and he became Chief Technical Planning & Supplies Officer in 1947.

Mr. H. E. Wilson, previously Chief Draughtsman & Assistant Works Manager, Great Northern Railway (Ireland), who, as recorded in our January 12 issue, has been appointed Works Manager & Acting Assistant Mechanical Engineer, began his mechanical engineering apprenticeship in the company's works at Dundalk in 1914. He was transferred to the drawing office in 1919, appointed Leading Draughtsman in 1922, Chief Draughtsman in 1934, and Chief Draughtsman & Assistant Works Manager in 1945. Mr. Wilson has been responsible, under the Mechanical Engineer, for the design and inspection of all new rolling stock including locomotives and railcars built or purchased by the company; also for the design of all diesel railcars supplied to the County Donegal Railways Joint Committee, which was the first railway in the British Isles to operate a regular passenger service by diesel railcars.

Mr. C. G. H. Rodgers, B.A., A.M.I.C.E., who has recently been appointed District Engineer, Uganda, East African Railways & Harbours, was educated at Whitby County School and Queens' College, Cambridge. He joined the Kenya & Uganda Railways & Harbours in 1937 as a cadet engineer and was appointed to the position of Assistant Engineer in 1940. Between 1940 and 1945 Mr. Rodgers served with the R.A.F.

Mr. J. H. F. Benford

Joint Commercial Manager, London Transport Executive, who has retired

Mr. D. McKenna

Appointed Commercial Manager, London Transport Executive

Mr. Austin Tofield

Appointed Assistant General European Agent, Pennsylvania Railroad, London

Mr. J. H. F. Benford, M.C., Joint Commercial Manager, London Transport Executive, who, as recorded in our December 29 issue, has retired, saw war service from 1914 to 1920, during which time he was awarded the Military Cross. He entered the service of the Underground Companies in 1920, in the Traffic Superintendent's office, London General Omnibus Company, and held positions in the operating and traffic investigation departments until 1933, when he entered the Vice-Chairman's office. Mr. Benford was appointed an Officer of the Board in February, 1937, and acted as Secretary to the Vice-Chairman's Traffic Committee until April, 1939, when he became Assistant to General Manager (Operation). In December, 1943, he was appointed Fares & Charges Officer. Mr. Benford became Commercial Manager in 1947 and he has held that position jointly with Mr. D. McKenna since March, 1950.

Mr. D. McKenna, O.B.E., Joint Commercial Manager, London Transport Executive, who, as recorded in our December 29 issue, has been appointed Commercial Manager and has assumed full responsibility for the work of the Commercial Department, is 39, and was educated at Eton and Trinity College, Cambridge, where he took his M.A. degree in engineering with first-class honours. He joined London Transport in 1934 and after serving in various offices was appointed one of the Vice-Chairman's Assistants towards the end of 1936. On the outbreak of war he was commissioned in the Transportation Branch of the Royal Engineers and served in the Middle East, Iraq, India and Burma, reaching the rank of Lt.-Colonel. He was made M.B.E. in 1943 and later became an O.B.E. On his return to London Transport at the end of 1945, Mr. McKenna was appointed Development & Research Officer and, at the same time, Secretary to the Standing Joint Committee of the Board and the four Main-Line Railway Companies, which was largely concerned in 1946 and 1947 with long-term railway planning in the London region. Mr. McKenna was appointed Rolling Stock Superintendent (Railways) in 1948 and Joint Commercial Manager in March, 1950.

Mr. Austin Tofield, M.B.E., who has been appointed Assistant General European Agent, Pennsylvania Railroad, London, as from February 1, in succession to Mr. F. T. Wheeler, has previously been Overseas & Continental Representative, British Railways, and Agent for the Associated Humber Lines, London. During the 1939-45 war, he served with the Royal Engineers (Movement Control) in France, North Africa, Sicily and Italy. He rose to the rank of Major and served at one time as a Staff Officer at General Eisenhower's Headquarters.

Mr. Arthur White, formerly Divisional Superintendent, London (East) Division, Southern Railway, whose death, at the age of 75, we briefly recorded last week, joined the L.B.S.C.R. at Streatham Hill in 1888. The following year he was transferred to Streatham Common and in 1890 took up a position in the trains section of the Office of the Superintendent of the Line. In 1902 Mr. White went to the Fare Claims Department, but returned to the Operating Department in 1907. In 1918 he was appointed Assistant to the Superintendent of the Line and in 1923 became Assistant Divisional Operating Superintendent, London (East). Mr. White was appointed Eastern Divisional Operating Superintendent in 1925 and London (East) Divisional Superintendent in 1930; he retired in 1936.

Sir Archibald McKinstry has retired from the board of Babcock & Wilcox Limited.

Brigadier J. V. Topham has been appointed Secretary of the British Engineers' Association, in succession to Sir William Christie, whose resignation takes effect this month.

We regret to record the death on January 15, at the age of 63, of Mr. A. E. Rayner, one time Assistant Secretary of the Institution of Electrical Engineers.

Mr. S. A. H. Bukhari, Senior Assistant of Movements on the North Western Railway of Pakistan, and Mr. S. Shane, Civil Engineer of the Burma Railways, recently visited Tasmania to study transport under the auspices of the United Nations fellowship scheme.

We regret to record the death on January 19, at the age of 73, of Sir Harry Harley, C.B.E., M.I.P.E., Chairman of the Coventry Gauge & Tool Co., Ltd., and a Director of the Coventry Precision Engineering & Repetition Co., Ltd.

The Minister of Transport has appointed the following Chairmen for four of the eight Area Transport Users' Consultative Committees, which he is in course of setting up:—

Captain W. H. Coombs, East Anglia Area Committee.

Brigadier F. Lane, West Midland Area Committee.

Sir Mark Hodgson, North East Area Committee.

Alderman H. Hodkinson, North West Area Committee.

The Minister hopes to appoint the full Committees for these areas shortly.

Dinner to Mr. John Alcock

A dinner was given at the Dorchester Hotel, London, on January 25, in honour of Mr. John Alcock, who relinquished the position of Chairman of the Locomotive Manufacturers' Association Internal Combustion Group last October. Mr. Alcock, who is Joint Managing Director of the Hunslet Engine Co., Ltd., had been Chairman of the Internal Combustion Group since its formation in 1947. The dinner was presided over by Mr. W. D. Lorimer, President of the Locomotive Manufacturers' Association. A letter expressing regret that he was unable to attend was read from Mr. Gerald Collingwood, the present Chairman of the Internal Combustion Group, who is now on a visit to Australia.

Mr. C. J. G. Taylor, Assistant to District Operating Superintendent, Glasgow, Scottish Region, who, as recorded in our January 5 issue, has been appointed Assistant District Traffic Superintendent, Aberdeen, joined the North British Railway at Edinburgh in 1921, and after experience in a number of departments, was selected in 1930 for traffic apprenticeship training in the Southern Area, L.N.E.R. Between 1934 and 1943, he was successively Assistant (Temporary) to the District Goods Manager, Leeds; Stationmaster, Laisterdyke; and Goods Agent, Dewsbury. In 1943 Mr. Taylor went to the Palestine Railways on loan, and for a year served as Officer-in-Charge of Hedjaz Railway, Transjordan. On returning to the service of the L.N.E.R. in 1945, he was appointed Goods Agent & Yardmaster, Sighthill, and two years later, became Assistant to the District Operating Superintendent, Glasgow (Staff & General).

At a recent meeting of the Council of the Public Transport Association, Mr. W. T. James was elected Chairman, and Mr. R. W. Birch and Mr. S. Dudman were elected Vice-Chairmen.

Mr. R. L. Chantrill, Chief Technical Engineer of the British Thomson-Houston Export Co. Ltd., has been elected a Director of the company.

Mr. Samuel M. Felton has been elected President & Chief Executive Officer of Shippers' Car Line Corporation, a subsidiary of the American Car & Foundry Company.

Mr. L. W. H. Lowther has been appointed Sales Engineer, Siemens and General Electric Railway Signal Co. Ltd., and Mr. F. G. Mitchell has been appointed Assistant Commercial Manager.

We regret to record the death, at the age of 84, of Mr. John B. Wilson, who designed the J. B. Wilson Sander, and was for some years Superintendent of the Canadian National Railways locomotive works at New Toronto, Toronto, and Belleville.

Mr. H. A. Johnson, late Chief Mechanical Engineer of the Gold Coast Railways, has been appointed Technical Representative, Railway Division, of British Timken Limited in Australia and New Zealand. He will commence his duties there on February 19, and his office will be at 473, Bourke Street, Melbourne, C.1, Australia.

Following the retirement on December 31, 1950, of Mr. J. G. Lowe, Comptroller & Secretary, Metropolitan-Vickers Electrical Co. Ltd., Mr. E. Salmon has been appointed Comptroller, and Mr. D. Thomson, Secretary. Mr. W. D. Taylor has been appointed to succeed Mr. Lowe as Secretary of Metropolitan-Vickers Electrical Export Co. Ltd.

Tube Investments Limited has announced that a Transport Sales Development Department has been established by its subsidiary, T.I. (Group Services) Limited. Mr. E. Bryan, formerly Technical Sales Manager of the Tube Investments Limited subsidiary, Metal Sections Limited, has been appointed Director of the Department, which will have its offices at Broadwell Works, Oldbury, Birmingham.

Mr. V. W. Durtnal, formerly advertisement representative of *Motor Industry*, has been appointed Advertising Manager of Trico-Folberth Limited, manufacturers of motorcar equipment.

Mr. G. W. Lacey has relinquished the title of Director & General Sales Manager, the British Aluminium Co. Ltd., and has assumed the designation of Director in Charge of Sales. Mr. R. G. H. Linzee has reliquished the title of Director & General Establishment Manager and has assumed the designation of Director in Charge of Establishment. Mr. G. A. Anderson, at present Deputy-General Sales Manager, has become General Sales Manager and Mr. H. H. Cundell, at present Sales Manager, has become Home Sales Manager, following the formation of a separate Export Sales Department.

XUM

British Transport Commission Statistics (Period No. 12)

Summary of the principal statistics for the four-week period ending December 3

STAFF

	B.T.C. Head Office	British Railways	London Transport	British Road Services (Road Haulage)	Road Passenger (Provincial & Scottish)	Hotels & Catering	Ships & Marine	Inland Waterways	Docks, Harbours, Wharves	Railway Clearing House	Commercial Advertisement	Legal	Films	Total
Number ...	241	607,800	98,234	75,519	59,399	17,677	6,118	4,997	19,081	657	209	276	28	890,236
Inc. or dec.	—	−2,939	−43	+236	−355	−308	−45	−3	−116	+13	—	+1	—	−3,559

BRITISH TRANSPORT COMMISSION TRAFFIC RECEIPTS

	Four weeks (Period No. 12)		Aggregate for 48 weeks	
	To Dec. 3, 1950	To Dec. 3, 1949	1950	1949
	£000	£000	£000	£000
British Railways—				
Passengers	5,966	6,314	98,541	105,605
Parcels, etc., by passenger train	2,480	2,263	28,483	26,803
Merchandise	7,540	6,401	79,531	73,962
Minerals	2,833	2,490	30,014	27,384
Coal & coke	6,796	5,614	71,717	62,741
Livestock	232	206	1,701	1,359
	25,847	23,288	309,987	297,854
British Railways—				
C. & D. and other road services	756	678	8,819	8,173
Ships	536	564	10,121	9,589
London Transport—				
Railways	1,219	1,116	13,425	13,266
Buses & coaches	2,333	2,291	28,510	28,981
Trams & trolleybuses	798	822	9,754	10,097
	4,350	4,229	51,689	52,344
British Road Services—				
Freight charges, etc.	5,499	4,463	57,711	33,263
Road Passenger Transport	2,554	2,289	35,392	32,780
Docks, Harbours & Wharves ...	897	893	11,010	10,307
Inland Waterways	130	117	1,509	1,409
Hotels & Catering	1,052	949	13,403	12,255

LONDON TRANSPORT

	Passenger journeys	Inc. or dec. per cent. over 1949	Car miles	Inc. or dec. per cent. over 1949
	000		000	
Railways...	49,048	−3·3	17,715	−1·4
Buses & coaches	204,673	−1·5	24,426	+3·1
Trams & trolleybuses	79,230	−12·0	8,110	−5·1
Total	333,041	−4·5	50,251	+0·1

INLAND WATERWAYS
Tonnage of traffic and ton miles

	Tonnage	Inc. or dec. per cent. over 1949	Ton miles	Inc. or dec. per cent. over 1949
	000		000	
Coal, coke, patent fuel & peat	435	−6·6	5,961	−12·4
Liquids in bulk	165	+29·9	4,017	+35·0
General merchandise ...	330	−2·0	5,512	−0·2
Total	930	+0·1	15,490	+1·3

BRITISH RAILWAYS
Rolling Stock Position

	Operating stock	Number under repair	Available operating stock	Serviceable stock in 1949
Locomotives	18,958	3,335	15,623	15,794
Coaching vehicles	58,019	5,297	52,722	50,744
Freight wagons...	1,102,648	81,625	1,021,023	1,016,212

BRITISH RAILWAYS
Passenger Journeys (Month of October, 1950)

Full fares	Monthly returns	Excursions, cheap day, etc.	Other descriptions	Workmen	Season tickets	Total	Inc. or dec. per cent. over 1949
5,814,000	9,405,000	17,900,000	3,672,000	19,349,000	25,144,000	81,284,000	+0·7

BRITISH RAILWAYS
Freight Tonnage Originating and Estimated Ton-Miles (Period No. 12)

	Minerals	Merchandise	Coal & coke	Livestock	Total	Inc. or dec. per cent. over 1949
	000	000	000	000	000	
Tons originating ...	4,959	4,376	13,709	103	23,147	+0·2
Ton-miles	413,157	585,253*	830,592	—	1,829,002	+1·9

* Includes livestock

BRITISH RAILWAYS (Period No. 12)

	Total steam coaching train-miles	Total electric coaching train-miles	Total freight train-miles	Freight train-miles per train engine-hour	Net ton-miles per total engine-hour	Locomotive coal consumption	
						Total tons	Lb. per engine-mile
	14,147,000	3,735,000	11,396,000	7·98	581	1,089,000	64·0
Inc. or dec. per cent. over 1949	−0·1	+0·9	+1·1	—	+3	−0·6	−0·1

Institution of Railway Signal Engineers

Paper and discussion on the testing of signalling installations

At a meeting of the Institution of Railway Signal Engineers in London on January 3, a paper dealing with the testing of signalling installations was read by Mr. N. Marshall, Eastern Region of British Railways. The President, Mr. F. Horler, was in the chair.

The paper dealt with the general principles of test procedure, preparations needed before beginning to test an installation, methods of checking the correctness of the wiring, points which experience had shown called for attention, application of the methods proposed to the testing of panel type signal boxes, and location of faults. It also discussed the limitations inherent in any testing method and instanced examples showing where considerable work was required if every chance of an error being overlooked was to be guarded against. The subject now under discussion had not previously been dealt with before the Institution.

Mr. F. B. Egginton, opening the discussion, said the paper threw an interesting light on an obscure part of signal work. Mr. Marshall had had considerable experience and during recent years had been in charge of the testing of large power installations.

In the case of one route-relay interlocking with 300 routes some 800 sheets of wiring circuits had to be provided to cover the signal box alone. At present a much larger installation was under test. He agreed that testing should be carried out both to a wiring diagram and a control table, as the double check showed that the circuit designer had put the correct interpretation on the table.

Mr. J. H. Currey preferred to use a lamp when testing rather than a voltmeter. He disliked the proposal to have signals connected up and blanked out for a time before bringing into use and preferred to use lamps connected across the outgoing terminals at the signal box and check out between there and the signal terminals later. Talk-back speakers were ideal. He did not favour checking wires from contact analysis.

Avoiding False Feeds

Mr. E. G. Brentnall thought the voltmeter offered advantages in dealing with new work. Care had to be taken when testing circuits involving lever contacts to avoid getting false feeds. These had been known to free a lock irregularly. He wondered if the author had had any trouble with capacity effect upsetting the performance of a.c. relays. He had known of one such case.

Mr. W. J. Claridge said that care was needed in connection with point control relays and in ensuring that all conditional controls were properly provided for.

Lt.-Colonel G. R. S. Wilson referred to the interest the paper had for the Inspecting Officers of Railways as showing the care that was taken to ensure that no mistake was overlooked when testing an installation before it was put into service. The subject had grown in importance and Mr. Marshall had rightly emphasised the attitude of mind needed to approach the question from the correct standpoint.

Mr. A. Barnes approved of the use of a panel from which the person in charge of testing could conduct operations. He also supported the practice of strapping contacts as otherwise one could not tell whether a particular one was performing the function intended. The voltmeter gave valuable information when testing, particularly when dealing with route-setting apparatus, and it was also useful when dealing with faults.

Mr. H. W. Firminger advocated an independent test, ignoring wiring and control tables. He was interested in the procedure adopted when an alteration had to be made and whether the whole installation was tested again or only a part.

Mr. W. Owen said there seemed to be as many systems of testing as testers, and he thought the person who tested from the signalling plan should be an independent tester who had had nothing to do with designing the circuits. Detachable top relays were a great help in arranging matters so that anything wrong was quickly found out.

Mr. C. C. Bennett thought that wiring diagrams might be laid out in more intelligent forms and that control tables might be standardised.

Mr. R. Grocott did not like the idea of testing commencing before the installing staff had got clear of the relay room. No wiring should be done once testing began, without the authority of the chief tester; his authority should be obtained even to permit access to the room.

Mr. H. W. Hadaway said that there was a distinct division between testing inside and outside circuits and he had found it valuable to use a testing board to represent the outside equipment; this enabled the traffic department to get its men into a box and learn its working before opening.

London Transport Canteen at Old Kent Road

Design enabling building to fit into future garage reconstruction plan

London Transport has opened a new staff canteen on an island site at Old Kent Road. It is of single-storey brick construction and well equipped with windows. Its shape is rectangular, with one semi-circular end, and it is designed to conform to a future reconstruction scheme for the adjacent garage. The exterior is of silver-grey facings with metal window frames and a Bison roof covered with Vermiculite lightweight screeding, and asphalted.

Inside, the effect is spacious. Two entrance halls give direct access from both street and garage to the dining and recreation rooms, and cloakrooms. Full-length polished plate-glass entrance doors and warm buff faience tiling make the halls light and airy. Inner doors, with copper light glazing, open into the recreation and dining rooms.

The recreation room itself occupies the whole of the end bay of the building; it has plastered walls in French grey under a suspended ceiling in broken white. The expanse of wall is broken by many large metal windows finished in green and the lower part is covered with flush vertical-grained mahogany panels. The flooring is of Semtex tiles. Facilities for most indoor games are provided, including two full-size billiard tables.

The buff faience tiling of the entrance halls has been carried out in the dining room, where the tiles are relieved by a green band top and bottom. A Vermiculite plaster acoustic ceiling has been provided. The flooring is of 9 in. × 9 in. quarry tiles with a 6-in. border. Most of the far wall of the dining room is occupied by a Staybrite hot counter, with glazed display case and green Warerite front panels to match the tops of the tables. In front of the counter is a bronze rail barrier.

Kitchen Equipment

Behind the counter lies the kitchen, 36 ft. × 30 ft. The kitchen walls are in 6-in. × 6-in. glazed cream tiling and the floor in 4-in. × 4-in. semi-vitreous tiles. Except for an electrically-operated brush-type crockery washing machine, all kitchen equipment is gas-operated. At the rear of the kitchen are a larder with built-in cold room of some 75 cu. ft. capacity, a dry store, vegetable store with revolving open-link shutter, canteen staff room with

Semi-circular end of Old Kent Road canteen

lockers,, and a small dining room for administrative staff.

The canteen, which will be open for 24 hours a day, will cater for over 500 daily. The contractors and sub-contractors were:

Consulting architects ...	James M. Monro & Son
General contractors ...	Wilson Lovatt & Sons Ltd.
Facing bricks	Broomhill Brick Co.
Roof	Concrete Limited.
Metal windows	Mellowes & Co. Ltd.
Glazing	Leay Glazing Service Ltd.
Faience tiles	Shaws Glazed Brick Co. Ltd.
All other tiling ...	Wiggins-Sankey Limited
Wood panelling... ...	A. G. Meddings & Co., Ltd.
Plumbing and heating ...	Z. D. Berry & Sons Ltd.
Gas heated counter ...	W. N. Froy & Sons Ltd.
Built-in cold room ...	Kelvinator Limited
Electric washing-up machine	Staines Kitchen Equipment Co. Ltd.
All other kitchen equipment (stoves, steamer, hot closet, sinks)	Benham & Sons Ltd.
Water softener ...	Permutit Co. Ltd.
Revolving shutter (in vegetable store)	Dennison Kett & Co. Ltd.

Cleansing Compressed Air Supply

WITH a view to obtaining an efficient compressed air supply, and to remove impurities from the supply lines, an installation has been evolved by Victor Products (Wallsend) Limited,

Aridifier for cleansing compressed air supply

Wallsend-on-Tyne, consisting of a Victor Aridifier, water trap and a self-cleaning air cock, the latter being a combined filter and control cock. The filter can be cleaned by turning the handle, which blows all collected scale and other impurities to atmosphere.

The Aridifier, through which the air passes, works on a centrifugal principle, and separates water from the air and expels it through the water trap, which acts as a non-return valve. The trap embodies a plastic float having an extraction rate of 5 gal. an hour under normal working conditions. The Aridifier is produced in four sizes for pressures up to 150 lb. per sq. in.

Resignation of Lord Inman

Mr. Alfred Barnes' message of appreciation; review of Hotels Executive catering arrangements

On his retirement from the chairmanship of the Hotels Executive, taking effect from January 15, to which reference was made in our January 12 issue, Lord Inman has received the following letter from the Minister of Transport, Mr. Alfred Barnes:—

January 15

DEAR LORD INMAN,

Thank you for your letter of January 8.

You gave me warning, of course, as long ago as March last that you wished to be released from the chairmanship of the Hotels Executive so that you could devote more time to your other activities. It was generous of you to agree to serve on a part-time basis for a longer time than you originally had in mind. I am sorry that the time has now come when you feel that you must relinquish your post.

It was about three years ago that you undertook, at my request, the important appointment of Chairman of the Hotels Executive. During that time much has been done to improve the services controlled by the Executive and I am quite sure that the public have appreciably benefited.

May I express my warm gratitude, and the gratitude too of His Majesty's Government as a whole, for the splendid and untiring work which you have done in the public interest?

Yours sincerely,
ALFRED BARNES.

The Rt. Hon. Lord Inman
of Knaresborough, P.C., J.P.

In a retrospect of the activities of the Hotels Executive under his chairmanship, given at a conference on January 23, Lord Inman stressed the importance of new developments in railway catering such as tray meals for trains without restaurant cars and for excursion parties; mobile trolleys both on platforms and in the corridors of trains; and streamline *table d'hôte* meal containers for serving individual meals in trains. Restaurant-car meals, stated Lord Inman, did not pay in themselves, though sale of drinks in trains did much to offset any loss; but they were an important amenity for passengers, and as such an essential of long-distance passenger trains.

Frequent Staff Conferences

For good service, continued Lord Inman, an essential factor was that the staff should be happy, interested in their work, and desirous of giving satisfaction. To help in achieving this, during the last three years frequent staff conferences had been held in London and all important centres, in every case presided over by Lord Inman, as Chairman, supported by Members of the Executive. Views of the management and staff had been freely exchanged and resulted in many improvements, both in the variety and cooking of food and in the standard of service generally. Those present at the conferences included hotel managers, key workers in the hotels, restaurant-car staff, and refreshment-room manageresses and assistants. The conferences were a marked success.

Visit to W. G. Bagnall's Works

At the invitation of the directors of W. G. Bagnall Limited, representatives of the technical press were given an opportunity of inspecting, on January 23, the first of four diesel-electric locomotives recently completed at Castle Engine Works, Stafford, for the Steel Company of Wales Ltd. The locomotive is the first of its type to be completed at the works since W. G. Bagnall Limited joined forces with the Brush Electrical Engineering Co. Ltd.

At a luncheon held at the Swan Hotel, Stafford, Mr. W. A. Smyth, Managing Director, W. G. Bagnall Limited, said that the firm was celebrating the completion of 75 years of specialisation in the design and manufacture of steam locomotives, and at the same time demonstrating that, by building the new diesel locomotive in collaboration with the Brush firm, its initiative and enterprise had not diminished.

Mr. Smyth said that in addition to the four diesel-electric locomotives at present building the firm was also building three steam locomotives which would also be used by the Steel Company of Wales for shunting purposes. Also in course of construction were a further eight diesel shunting locomotives. A contract had also been received for 25 diesel-electric main-line locomotives for the Ceylon Government Railway. The locomotives would be erected at Loughborough, the frames, bogies and mechanical components being supplied by W. G. Bagnall Limited.

Mr. J. W. C. Milligan, General Manager, Brush Electrical Engineering Co. Ltd., referred briefly to the formation of Brush Bagnall Traction Limited, to co-ordinate the diesel and electric efforts of the associates, W. G. Bagnall Limited, the Brush Electrical Engineering Co. Ltd., and Mirrlees, Bickerton & Day. To provide for the building of heavier main-line diesels a new building was being erected at Loughborough.

Replying for the visitors, Mr. C. Wordsworth, Assistant Traffic Superintendent, Steel Company of Wales Ltd., said that, with the completion of the steam shunting locomotives, it would be possible to arrive at comparative costs between the two forms of motive power.

Those present included:—

Messrs. W. A. Smyth, Managing Director, and H. Davies, General Manager, W. G. Bagnall Limited; J. W. C. Milligan, General Manager, Brush Electrical Engineering Co. Ltd.; J. T. Rymer, Managing Director, Mirrlees, Bickerton & Day; R. Bate, Sales Director, Brush Electrical Engineering Co. Ltd.; C. Wordsworth, Assistant Traffic Superintendent, Steel Company of Wales, and J. Ayres, Works Director, Brush Electrical Engineering Co. Ltd.

Staff & Labour Matters

London Goods Depot Strike

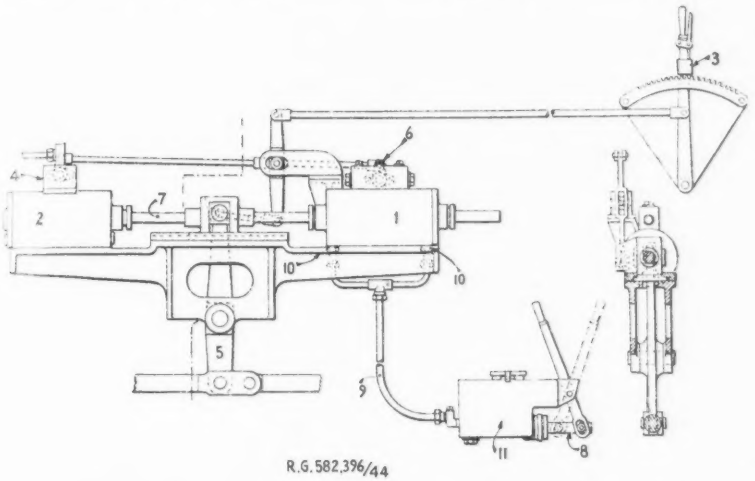
After the decision of the Railway Executive to postpone temporarily the date of the Glasgow-London traffic integration scheme on the understanding that normal working would be resumed immediately and that the scheme would operate from January 29, the N.U.R. Executive Committee met representatives of the strikers on January 17. The men decided unanimously to resume normal working.

The meeting on January 19 between the Railway and Road Haulage Executives and the unions concerned was held to consider points arising out of the integration of freight transport. The meeting adjourned.

ABSTRACTS OF RECENT PATENTS*

No. 582,396. Locomotive Reversing Gear
Beyer, Peacock & Co. Ltd. of Gorton, Manchester, and J. Hadfield of Edenholme, Sandy Lane, Romiley. (*Application date*: *October* 7, 1944.)

The invention relates to the hydraulic locking arrangement 1 which holds the reversing gear in its set position after it has been moved by a power-operated

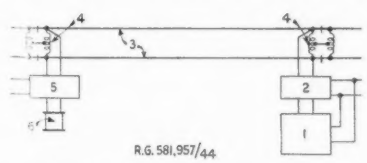


R.G. 582,396/44

device 2 under the control of a hand lever 3. Movement of lever 3 operates valve 4, which admits steam pressure to the device 2 and so moves the operating lever 5. At the same time it opens valve 6 to permit communication between the two sides of a locking piston in the device 1, the cylinder being filled with oil. After operation, the valve 6 closes and no movement of the rod 7 can take place. The two ends of the cylinder 1 are maintained filled with oil by a spring-loaded pump plunger 8 which maintains a constant pressure of oil in pipe 9 leading through non-return valves 10 to the lowest points at each end of the locking cylinder 1. Consequently, any leakage from cylinder 1 in use is immediately made up by oil from pump 11 without any possibility of air entering the system.

No. 581,957. Track Signalling
Westinghouse Brake & Signal Co. Ltd. and L. H. Peter, both of 82, *York Way, London, N.*1. (*Application date*: *June* 13, 1944.)

This invention relates to signalling by

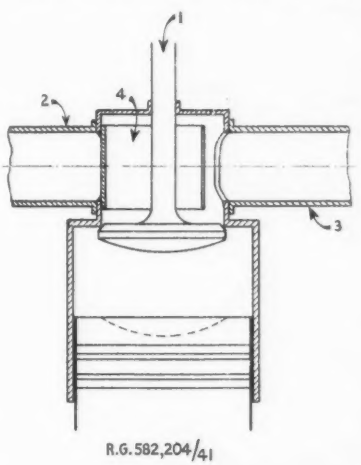


R.G. 581,957/44

means of alternating current. The track is divided into sections electrically coupled by chokes which pass the traction currents but isolate signalling currents. The size of these chokes is considerably reduced by using signalling currents of about 300 cycles a second which are modulated or converted to the normal frequency at a point adjacent to the controlled equipment. In one arrangement current at approximately 300 cycles a second is generated in an oscillator 1 and modulated by the signalling current at 2. The modulated carrier passes along the section 3, being isolated from adjacent sections by chokes 4 and reaches a receiver 5 where it is demodulated to operate the local equipment 6. Instead of modulating the carrier current, signalling may be directly done by the high frequency current, with a frequency converter inserted at the remote installation to enable the standard local equipment to be operated.

No. 582,204. Internal Combustion Engine Valves
O. Petersen of 3, *Dronningermarken, Gentofte, Copenhagen, Denmark.* (*Convention date*: *August* 12, 1940.)

To provide a large valve area, one large dual-purpose valve 1 is used in communication with the inlet pipe 2 and exhaust

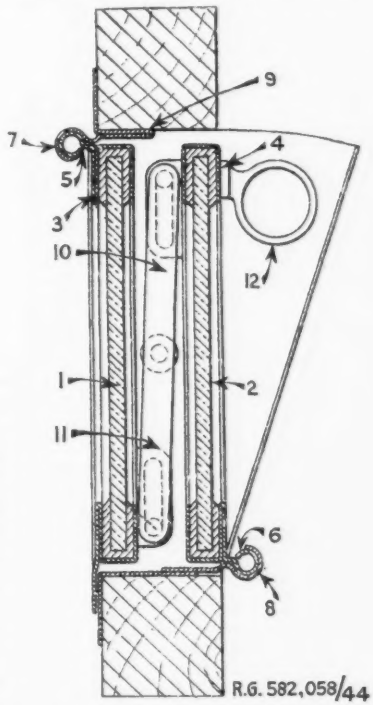


R.G. 582,204/41

pipe 3 at the appropriate times by a cylindrical rotary valve 4. The exhaust pipe system is so dimensioned that it is tuned to resonate at the normal running speed of the engine and so produce a rarefaction in the valve space immediately following an exhaust stroke; it thus clears this space of spent gas and, during the changeover period of the valve member 4, assists in the induction of fresh air.

No. 582,058. Ventilators
Percy Lane Limited of Planet Works, Tyburn Road, Erdington, Birmingham, and Percy Lane of 16, *Brueton Avenue, Solihull.* (*Application date*: *June* 24, 1944.)

A ventilator for fitting in the side of a passenger vehicle body is formed of two panels, 1 and 2, which may be of glass, held in frames 3 and 4, which are pivoted by cylindrical extensions 5 and 6 in corresponding channels, 7 and 8 in the main frame 9. The two panels 1 and 2 are



R.G. 582,058/44

made to move together by a pivoted lever 10 engaging in slotted lugs 11 on their frames and the ventilator is opened by pulling on a finger ring 12. A spring-loaded ball catch on the lever 10, engaging recesses in the side of the main frame 9, may be used to hold the ventilator in various selected positions.

INCREASE IN ROAD TRAFFIC.—Road traffic in Britain in 1950 was about 7 per cent. greater by volume than in 1938. This figure was arrived at by the Ministry of Transport after the census taken between August 14 and 20 last. On trunk and first-class roads the general increase was 6 per cent. and on second-class roads 12 per cent. Buses and coaches increased by 34 per cent. and goods vehicles 59 per cent.

SHORTAGE OF PACKING MATERIALS FOR EXPORT CABLES.—The Rubber Cable Manufacturers' Association, 52-54, High Holborn, London, W.C.1, states that because of the difficulty in obtaining adequate supplies of certain packing materials, its members find it necessary to pack rubber insulated cables by alternative methods, and with materials other than those normally used. Every effort will be made to maintain usual practice so far as supplies permit.

* These abridgements of recently published specifications are specially compiled for *The Railway Gazette*, by permission of the Controller of His Majesty's Stationery Office. Full specifications can be obtained from the Patent Office, 25, Southampton Buildings, London, W.C.2, price 1s. each.

Contracts & Tenders

The 100 "YP" class 4-6-2 locomotives which, as recorded in our January 19 issue, have been ordered from the North British Locomotive Co. Ltd. by the Indian Government, will have 15¼ in. dia. × 24 in. stroke cylinders, 210 lb. per sq. in. boiler pressure, 4 ft. 6 in. dia. coupled wheels, and a tractive effort at 85 per cent. b.p. of 18,400 lb. The locomotives will have double-bogie tenders with a bunker capacity for 9½ tons of coal and tank capacity for 3,000 gal. Length over buffers will be 62 ft. 7½ in. and the approximate weight of engine and tender in working order 97½ tons.

The Railway Executive has recently placed a contract with the Butterley Co. Ltd., for 387 ballast and sleeper wagons.

A contract for three "RDC-1" type railcars, with seats for 90 passengers, has been placed with the Budd Company, Philadelphia, Pa., United States, by the Commonwealth Railways of Australia.

A contract has been placed with Beyer, Peacock & Co. Ltd., by the Crown Agents for the Colonies for sixteen "56" class 4—8—2+2—8—4 Beyer-Garratt locomotives for the Kenya-Uganda section of the East African Railways. The locomotives are a modified version of a standard type built during the war for metre-gauge railways. The railway already has six locomotives of the "56" class which were part of an order originally destined for Burma.

Notes and News

Designing Civil Engineer Required.—Applications are invited for the post of designing civil engineer required by the Queensland Government Railways. See Official Notices on page 111.

Standard Locomotive on View to Public.—British Railways first standard locomotive, *Britannia*, is to be on view to the public between 1 and 5 p.m. on Tuesday, January 30, at platform 4, Marylebone Station, after being named by Mr. Alfred Barnes, the Minister of Transport.

Institute of Transport (Northern Ireland Section).—The monthly meeting of the Northern Ireland section of the Institute of Transport was held at Belfast on January 18. The Chairman of the section, Mr. James A. Clarke, presided. An illustrated lecture on the subject of "Ordnance Survey of Northern Ireland" was given by the Chief Survey Officer, Northern Ireland, Brigadier K. M. Papworth. A vote of thanks to Brigadier Papworth was proposed by Mr. W. A. Ryan and seconded by Mr. T. B. Andison.

Waste Paper Needs are Urgent.—As a part of its campaign to obtain 1,000,000 tons of waste paper this year the Waste Paper Recovery Association, 52, Mount Street, London, W.1, is now appealing to all trade and professional associations as well as Chambers of Commerce and rotary clubs to increase the commercial collections of used paper and board. Mr. Sidney T. Garland, General Manager, states that a big gap between supply and demand was already making itself felt before the urgent needs of the defence programme became evident. Packaging materials for both defence and export needs must have priority. Adequate requirements for the home market can now be met therefore only by the recovery of much greater quantities of used and unwanted paper. The amount of 1,000,000 tons needed this year is about 200,000 tons more than was collected in the year 1949.

Institute of Transport, Metropolitan Section.—At a meeting of the Institute of Transport, Metropolitan Section, to be held at the Institute of Transport, 80, Portland Place, London, W.1, at 5.30 for 6 p.m., on February 5, Mr. S. E. Parkhouse, Chief Officer (Operating), Railway Executive, will read a paper on "Railway Freight Rolling Stock."

Shortage of Coal in Holland.—Coal supplies of Dutch industry will be cut by a fifth from February 1 because of the critical coal shortage, Professor van den Brink, Minister for Economic Affairs, announced on January 18. The Dutch railways have reduced passenger services from January 22 to save 300 tons a day and buses are being used wherever possible.

Collision Near Weston-super-Mare.—The Western Region main line from Bristol to the West of England was blocked on January 21, after a collision near Weston-super-Mare between a light engine and a goods train. Both engines and a number of wagons were derailed, and the drivers and firemen of both engines were taken to hospital suffering from shock and cuts, but were not detained.

Road Haulage Rate Increase.—To meet the recent heavy increases in costs, more particularly tyres, wages, and fuel, the Road Haulage Executive is increasing its general haulage and parcels rates by 10 per cent. from January 29. This is the second increase since the Road Haulage Executive took over road haulage in February, 1948. The first increase was of 7½ per cent. after last year's budget.

Brown Bayley's Steel Works Limited.—Details are available of the proposed segregation of assets of Brown Bayley's Steel Works Limited under a scheme agreed with the Ministry of Supply. Compensation attributable to investments which it is proposed to retain is £1,200,000; and it is proposed to modify the rights of preference shareholders, so that in the event of winding-up they are entitled to 35s. a share.

British Agent for Swiss Machine Tools.—The firm of A. C. Wickman Limited, Coventry, states that it has been appointed sole agent for Tornos machines in the United Kingdom as from January 1 this year. Usines Tornos is recognised as one of the leading makers of sliding head precision automatics and its range of products includes machines having capacities from $\frac{5}{32}$-in. to $1\frac{3}{16}$-in. dia. Catalogues describing this range of tools can be obtained from A. C. Wickman Limited.

L.M.R. Passenger Train Cancellations.—The London Midland Region announces further temporary withdrawals of passenger services from January 29 as a contribution to the Government campaign to save coal. Trains temporarily discontinued include: 10.30 a.m. Euston to Liverpool; 11.10 a.m. Liverpool to Euston; 12.15 p.m. Euston to Manchester; 12.05 Manchester to Euston; 2 p.m. Manchester Victoria to Glasgow; and 1.45 p.m. Glasgow to Liverpool Exchange. The following trains will run only on certain days: 10.15 a.m. St. Pancras to Manchester and 8.55 a.m. Manchester to St. Pancras (Mondays, Tuesdays, Wednesdays and Saturdays); 6.55 p.m. Euston to Birmingham and 4.40 Birmingham to Euston (Fridays); 8.35 a.m. Bristol to Bradford and 1.55 p.m. Sheffield to Bristol (Fridays and Saturdays).

Summer Trips without Passports.—Plans have been made for passport-free day trips from Britain to France next summer, and a Government announcement outlining the conditions will be made in the near future. These trips will start after Easter and the first two ports to be selected are expected to be Tilbury and Newhaven.

Closing of East Kent Railway.—The former East Kent Railway, now part of the Southern Region of British Railways, is to be closed to all normal commercial traffic as from March 1. The passenger service was suspended in the autumn of 1950. It is understood that coal traffic will continue to be worked from Tilmanstone Colliery.

Brush Bagnall Traction Limited.—In our issue of January 12, on page 53, details were given of the selling company, Brush Bagnall Traction Limited, formed recently to further the diesel-electric and electric traction business of the Brush-Aboe group and its associate company, W. G. Bagnall Limited, and the name of the Sales Manager was given as Mr. P. J. Marten. This should read Mr. P. J. Martin.

Manchester-Sheffield-Wath Electrification Progress.—Eight of the 85 locomotives for the Manchester-Sheffield-Wath electrification have been completed, and six more are under construction at Dukinfield. In November last three of the eight underwent brake tests between Liverpool Street and Shenfield. Of those now being built, one will be shown at the Festival of Britain exhibition. Steelwork has been erected along 70 per cent. of the route, but many obstructions are being encountered. So far, less than 10 per cent. of the wiring has been completed. It is not expected that the whole scheme will be in full working order before 1954, in view of the slow delivery of steel.

Alpine Railways Blocked.—The avalanches which have caused widespread damage and heavy casualties in Switzerland, Austria and Northern Italy, cut many railway lines. The Gotthard, Simplon, and Visp-Zermatt lines were blocked but through working was soon re-started. The latest reports are that the Rhaetian Railway is working only between Landquart and Klosters, and Chur and Filisur; Davos-Monstein Station, between Davos and Filisur, was buried. The Andermatt-Disentis section of the Furka-Oberalp Railway is cut. On January 20, a train on the Chur-Arosa line was trapped in a tunnel, both ends of which were blocked. In the Austrian Tirol, several lines were blocked but the Arlberg route has been restored.

Dollar Loan for South Africa.—The International Bank for Reconstruction & Development has loaned $50 million to the Government and public authorities in the Union of South Africa, $20 million to the Union Government for the expansion of railway and harbour facilities and $30 million to the Electricity Supply Commission; the former is for 15 years at 3¼ per cent. (including the bank's regular one per cent. commission for allocation to reserve) and the latter for 20 years at 4 per cent. inclu-

OFFICIAL NOTICES

WE buy used or unserviceable Steel Files at good prices, in lots of 2 cwts. or more.—THOS. W. WARD LIMITED, R.S. Dept., Albion Works, Sheffield.

THE High Commissioner for Pakistan invites tenders for the supply of:—4 XA and 2 XC Type BG Loco Boilers for North Western Railway. Forms of tender, which are returnable to the Director General, Railways, Ministry of Communications (Railway Division), Government of Pakistan, Karachi, by March 28, 1951, may be obtained from the Commercial Secretary, Supply & Stores Department, 39/40, Lowndes Square, London, S.W.1, on payment of a fee of £15 (non-returnable). The Ref. SS5724/GS should be quoted on all applications for forms.

GLOSSARY OF WOOD. A technical dictionary for all associated with timber and its uses. Ten thousand terms about timber—the common and the little known, the old and the new. Ten thousand definitions covering the entire field of timber and its uses—growth, marketing, utilisation. The commercial timbers, their qualities and uses, tools and woodworking equipment, are all here explained simply, concisely and accurately. Illustrated by many clear line drawings. Price 21s. net. By post 21s. 9d. Tothill Press Limited, 33, Tothill Street, Westminster, London, S.W.1.

AUSTRALIA

QUEENSLAND GOVERNMENT RAILWAYS

DESIGNING CIVIL ENGINEER

APPLICATIONS will be received by the undersigned until February 28, 1951, from persons desiring appointment as:—Designing Civil Engineer—Queensland Government Railways. (Present salary range £791 to £916 per annum.) Applicants must hold Degree in Engineering from a recognised University or other equivalent qualification, such as Corporate Membership of the Institution of Civil Engineers or Structural Engineers; must be capable of the preparation of drawings involving the design of and calculations for any civil engineering structures, such as railway and roadway bridges in steel, reinforced concrete or timber, retaining walls, dams, drainage works, water supplies, etc.; and must have had not less than 2 years' experience in some of these, including steel and reinforced concrete bridges. Appointment may be made at a commencing salary within range stated, according to qualifications and experience. Particulars required to be furnished by applicants and conditions of employment will be supplied on application to the undersigned. M. McAULEY, Acting Agent General for Queensland, 409-410, The Strand, London.

DIRECTORY OF RAILWAY OFFICIALS & YEAR BOOK. A useful reference book for railway officers, engineering firms, and all who do business with railways. The only Directory which enables one to find the right railway and the right officer at the right moment. Issued July each year. Price 30s. *net*. Tothill Press Limited, 33, Tothill Street, Westminster, London, S.W.1.

RAILWAY SIGNALLING AND COMMUNICATIONS INSTALLATION AND MAINTENANCE. A practical guide, especially intended to help Signal Inspectors, Installers, Fitters, Linesmen, Draughtsmen, and all concerned with installing and maintaining Signal, Telegraph, and Telephone Equipment. 416 pp. Many illustrations. Cloth. 8s. By post 8s. 6d. *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

TRANSPORT ADMINISTRATION IN TROPICAL DEPENDENCIES. By George V. O. Bulkeley, C.B.E., M.I.Mech.E. With chapters on Finance, Accounting and Statistical Method. In collaboration with Ernest J. Smith, F.C.I.S., formerly Chief Accountant, Nigerian Government Railway. 190 pages Medium 8vo. Full cloth. Price 20s. By post 20s. 6d. *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

sive. The placing of $10 million of Union Government 4 to 5-year promissory notes—the proceeds in fact to be used likewise for railway purposes if required—with eight commercial banks has been arranged through Dillon, Read & Company. The $20-million transport loan is to be used to buy rolling stock, road motor equipment, spare parts, and special machinery for aircraft. It is estimated that about 20 per cent. of the equipment for the transport and power projects will be ordered from the dollar area and the remaining 80 per cent. from the United Kingdom.

Triplex Safety Glass Company.—The Triplex Safety Glass Co. Ltd. has acquired the firms of Stern & Bell Limited, Birmingham, and Weldall & Assembly Limited, Stourbridge. Stern & Bell specialise in welded fabrications, forging, flame-cutting, and general engineering, and Weldall make large welded fabrications. Sir Graham Cunningham, Chairman & Managing Director of Triplex, is the Chairman of both companies.

Tube Investments Transport Service.—Tube Investments Limited announce the formation of a transport sales development department by its subsidiary T.I. (Group Services) Limited. Mr. E. Bryan, formerly Technical Sales Manager, Metal Sections Limited, has been appointed Director of the department. The department will offer a full service to public road and rail transport, truck, trailer, and caravan industries, for which an increasingly wide range of components and parts are now being manufactured by the group.

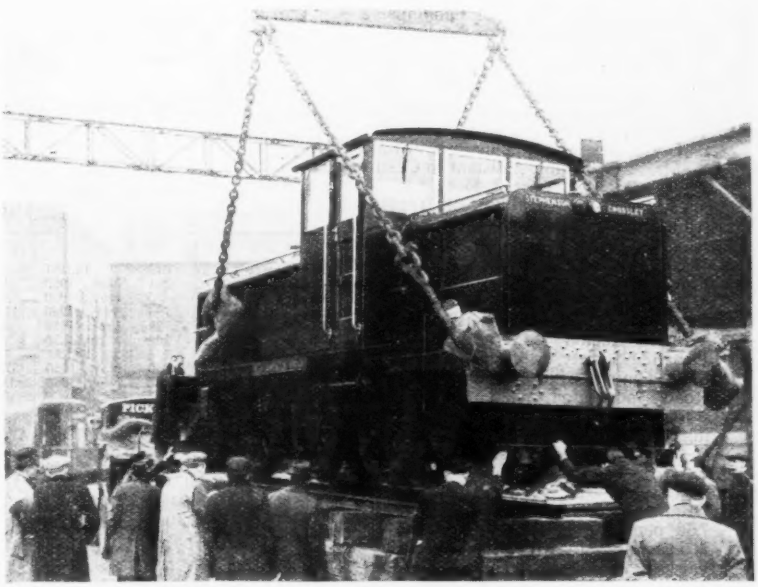
Hotel Wages Proposals.—The Licensed Hotel Wages Board is now drafting wage notification proposals for the hotel industry, and the question of "spread-over" of hours, which might have the effect of easing the wages burden on smaller residential hotels, will be dealt with. This was disclosed on January 19 by Sir Robert Gould, Chief Industrial Commissioner to the Minister of Labour, who was discussing a letter sent to the Catering Wages Commission by Mr. George Isaacs, in which the Minister stated that he felt it to be of primary importance that any modifications in the present wage structure should become effective before the start of the 1951 holiday season. The Minister requested that if, in the light of observations made on the report by both sides of the industry, it was felt that the Catering Wages Board was no longer necessary, or that its field of operation should be varied, a formal recommendation should be made on which he could then take action.

New Year Message from Southern Region C.R.O.—Mr. C. P. Hopkins, Chief Regional Officer, Southern Region, in a New Year message to the members of the staff of the Region, thanks them for their help during the past year and calls on them to put all their efforts into the considerable tasks lying ahead. Above all, he says, is the need to increase revenue, and whatever his duties, each member can make a real contribution to the common aim of prosperity for British Railways, for which all can be canvassers.

Liége International Fair.—Exhibits at the Liége International Fair from April 21 to May 6 will include, in Group X, locomotives, passenger coaches, wagons, railcars, containers, and track and signal equipment. Group XII embraces steam, gas, diesel, and petrol engines, turbines, compressors, industrial fuel oil burners, hydraulic equipment, pumps, and so on. Machine tools will be shown in Group XIII and miscellaneous gears and attachments in Group XIV. Electrical exhibits of all kinds will be on view in Group XVII, and precision instruments in Group XVIII, and other groups will embrace a wide range of engineering and industrial goods of all descriptions. The Office of the Fair is at 17 Boulevard d'Avroy, Liége.

Transport Architecture.—An exhibition entitled "The Architecture of Transport," which is to be opened by Lord Hurcomb, Chairman of the British Transport Commission, will be on view at the Royal Institute of British Architects, 66, Portland Place, W.1, from February 22 to March 22. The exhibition, which will be open from 10 a.m. to 7 p.m. on weekdays and from

Diesel Locomotive for Festival of Britain



A 330-h.p. Stephenson-Crossley diesel mechanical locomotive, built by Robert Stephenson & Hawthorns Ltd., being unloaded at Camden Goods Station, L.M.R., on its way to the Festival of Britain site

10 a.m. to 5 p.m. on Saturdays, will be divided into four main sections—road, rail, water, and air, and it will show by means of photographs, plans and models the architect's work in these spheres. A large proportion of the exhibition will be devoted to projects in this country, but there will also be selections from abroad.

Eastern Region C.R.O.'s New Year Message.—Although the times are difficult, states Mr. C. K. Bird, Chief Regional Officer, Eastern Region, in a New Year message to the Eastern Region staff, this must rather stimulate the extra effort which all have in reserve. He feels that their sense of tradition and common aim will ensure the successful development of British Railways for which they all strive.

Nitrate Railways.—On his return after two months in Chile, Mr. H. W. Holmden, of the Nitrate Railways Company, reported that on January 17 the President of Chile signed a decree, the effect of which "will be to divest the company of the responsibility of operating the railways on terms which should result in a surplus, after payment of debts, for the shareholders." The implementation of this decree will involve certain valuations being made and may be the subject of negotiations, and the directors are not yet in a position to indicate to the shareholders how they will be affected. The President, however, at an audience granted to Mr. Holmden on the eve of his departure, assured him that it was the wish of the Chilean Government to treat any difficulties which might yet arise in a broadminded and equitable manner.

Forthcoming Meetings

January 27 (*Sat.*).—Permanent Way Institution. Annual Winter Meeting, at the Institution of Civil Engineers, Great George Street, Westminster, S.W.1, at 2.30 p.m. Annual Winter Dinner at the Railway Executive Headquarters, 222, Marylebone Road, London, N.W.1, at 5.45 for 6.15 p.m.

January 27 (*Sat.*).—Railway Students' Association, London School of Economics & Political Science, visit to Paddington Station.

January 30 (*Tue.*).—South Wales & Monmouthshire Railways & Docks Lecture & Debating Society, at the Angel Hotel, Westgate Street, Cardiff, at 6.30 p.m. "Reflections on American Visit," by Mr. L. G. Taylor, Assistant to Chief Docks Manager, Cardiff Docks.

January 31 (*Wed.*).—Institute of Traffic Administration, London Centre, at the Kingsley Hotel, Bloomsbury Way, W.C.1, at 7.15 p.m. "Nationalisation of Road Passenger Transport," by Mr. L. C. Harrison.

February 1 (*Thu.*).—British Railways, Western Region, London Lecture & Debating Society, in the Headquarters Staff Dining Club, Bishop's Bridge Road, Paddington, W.2, at 5.45 p.m. "The Design & Construction of Rolling Stock," by Mr. H. Randle, Carriage & Wagon Engineer, Western Region.

February 1 (*Thu.*). — Electric Railway Society, at the Fred Tallant Hall, Drummond Street, London, N.W.1, at 7.30 p.m. "Four Interurbans and a Monstrosity," by Mr. A. A. Jackson.

February 2 (*Fri.*).—Scottish Society of Students of the Locomotive, at 302, Buchanan Street, Glasgow, C.2, at 7.30 p.m. "Reminiscences of My Railway Life," by Mr. G. W. Phillips.

Railway Stock Market

Aided by hopes of higher dividends, industrial shares continued to display good features. British Funds, in contrast, turned easier, partly because of expectations of a new issue of Savings Certificates and a tendency to await any further news of how the Government proposes to pay for re-armament. It is generally assumed the £300 million issue of nationalisation steel stock will be made next month.

Because of the difficulty of raising taxation much further, it may be necessary to float a big Defence loan in due course. Even if there were a cease-fire in Korea, it is realised that the re-armament drive would continue and industry generally must face a serious shortage of many materials. Consequently companies which are outside re-armament work, and the export trade drive, probably face a very difficult period. Wider recognition of this partly explains the more cautious attitude in industrial markets.

There was only limited interest in foreign rails this week. Mexican stocks again attracted attention on further talk that the Mexican peso may be revalued. Mexican Central "A" bonds have risen afresh to 60, and National of Mexico 4½ per cent. non-assented bonds were 40½.

After their recent rise, United of Havana stocks came in for profit-taking, and the 1906 debentures eased to 16¼. The market is hopeful that there may be a take-over offer from the Cuban Government, but there is no reason to expect any early move of this kind. Consequently United of Havana stocks still have to be regarded largely as a long-term speculation.

Lepoldina stocks held steady with the ordinary at 11, the preference 28, the 4 per cent. debentures 99½ and the 6½ per cent. debentures 147½. On the other hand, Leopoldina Terminal 5 per cent. debentures eased to 93½ and the ordinary units to 1s. 3d. Elsewhere, Great Western of Brazil shares strengthened to 157s., San Paulo 10s. units were active around 16s. 9d. and Brazil Rail gold bonds 44.

Antofagasta ordinary and preference stocks kept steady at 7 and 48½ respectively. Nitrate Rails were 73s. 9d. and Taltal shares at 15s. 6d.

Elsewhere, Nyasaland 3½ per cent. debentures have changed hands at 88 and White Pass Yukon 5 per cent. debentures around 86¼. Dorada stock were around 79, and La Guaira 80, while Bolivar "C" debentures changed hands around 58. Manila "A" bonds were 59 and the preference shares 6s. 3d. Canadian Pacifics have been active up to close on 47; the 4 per cent. preference stock was 74 and the 4 per cent. debentures 99¼.

Movements among shares of road transport companies were again small, but they remained firmly held and mostly in small supply in the market. Potteries Traction were dealt in around 42s. 6d. and Devon General around £7½. Southdown eased to 118s. 9d., Lancashire Transport were 61s. 3d. and West Riding 59s.

Nationalisation steel shares held steady, selling again being matched by buying pending the issue of the £300 million of steel stock, expected next month. As mentioned in these columns last week, some of the big financial institutions which are large buyers of British Funds are purchasing steel shares as they are estimated to represent a "cheap" means of acquiring an interest in gilt-edged. It continues to be assumed in the City that the nationalisation steel stock is likely to be a long-dated 3½ per cent. stock issued at par. In nearly all cases steel shares continue to be quoted well below their official take-over levels.

Re-armament shares have been more active, including Cammell Laird and Vickers, which attracted on unofficial estimates of the terms of nationalisation compensation for the English Steel Corporation in which both companies are shareholders. Whether this compensation will mean a special return of some kind for shareholders in Vickers and Cammell Laird remains to be seen. Guest Keen have moved up to 50s. 4½d. and Babcock & Wilcox to 68s. T. W. Ward held firm at 66s. 6d.

Shares of locomotive builders and engineers have shown further recent gains and also tended to attract attention on hopes that meat talks with the Argentine will succeed and be followed by easing of exchange and other restrictions. North British Locomotive rose further to 21s. 6d. partly on talk of higher dividend possibilities. Gloucester Wagon were 15s. 6d., Beyer Peacock 26s., Vulcan Foundry 25s. 9d. and Wagon Repairs 5s. shares 16s. Hurst Nelson were 60s. 9d. at Glasgow. Birmingham Wagon were 31s. 9d.

Traffic Table of Overseas and Foreign Railways

	Railway	Miles open	Week ended	Traffics for week: Total this year	Traffics for week: Inc. or dec. compared with 1948/49	No. of weeks	Aggregate traffics to date: Total 1949/50	Aggregate traffics to date: Increase or decrease
				£	£		£	£
South & Central America	Antofagasta ...	811	14.1.51	101,460	+ 14,000	2	178,220	+ 38,210
	Costa Rica ...	281	Nov., 1950	c936,206	+ c27,594	22	c5,297,269	+ c499,190
	Dorada	70	Nov., 1950	36,972	+ 13,063	48	428,205	+ 107,418
	Inter. Ctl. Amer. ...	794	Nov., 1950	$1,059,387	+ $34,405	48	$12,260,819	+ $1,125,713
	La Guaira	22¾	Sept., 1950	$68,726	— $39,529	39	$725,535	— $241,943
	Nitrate	382	15.8.50	10,816	— 8,656	32	286,336	+ 6,203
	Paraguay Cent. ...	274	12.1.51	£196,106	+ £60,851	28	£5,623,658	+ £1,620,941
	Peru Corp. ...	1,050	Nov., 1950	$7,577,000	+ $1,083,700	22	$38,783,000	+ $11,773,242
	,, (Bolivian Section)	66	Nov., 1950	Bs.13,612,000	+ Bs.2,401,000	22	Bs. 56,586,000	+ Bs.4,428,836
	Salvador	100	Oct., 1950	c87,000	+ c19,000	18	c355,000	+ c42,000
	Taltal	154	Dec., 1950	$1,435,116	— $57,262	26	$9,256,802	+ $1,584,101
Canada	Canadian National†	23,473	Oct., 1950	18,063,000	+ 2,947,000	43	150,250,000	+ 13,286,000
	Canadian Pacific† ...	17,037	Nov., 1950	11,700,000	+ 978,000	48	114,918,000	+ 3,873,000
Various	Barsi Light* ...	167	Nov., 1950	30,142	+ 2,482	35	231,667	+ 6,945
	Egyptian Delta ...	607	10.10.50	18,245	+ 1,296	28	319,911	— 24,005
	Gold Coast ...	536	Nov., 1950	308,361	+ 29,865	35	1,959,582	+ 65,411
	Mid. of W. Australia	277	Nov., 1950	40,070	+ 10,472	22	193,383	+ 51,544
	Nigeria	1,900	Jan., 1950	502,360	+ 38,978	44	5,017,814	+ 266,573
	South Africa ...	13,347	23.12.50	1,969,606	+ 481,655	37	65,116,342	+ 9,172,744
	Victoria	4,744	Sept., 1950	1,729,344	+ 103,977	13	—	—

* Receipts are calculated at 1s. 6d. to the rupee

† Calculated at $3 to £1